

# Glossary Terms

|                                         |             |                                          |                                     |
|-----------------------------------------|-------------|------------------------------------------|-------------------------------------|
| $\epsilon$                              | 1584        | ${}_5W_6$                                | 5501                                |
| $\alpha$                                | 7181, 12203 | 5'UTR                                    | 8126                                |
| $\alpha$ - $\gamma$ Transformation      | 6938        | ${}_6Q_1$                                | 5500                                |
| $\rho$                                  | 7181        | ${}_6W_1$                                | 5501                                |
| $\beta$                                 | 7181        | $a$                                      | 12202                               |
| $\beta$ - $\beta$ Transformation        | 6938        | $A$                                      | 12202                               |
| $\delta$                                | 7181        | AAV                                      | 10815                               |
| $\eta$                                  | 1584        | Abandoned mines                          | 6646                                |
| $\eta_c$                                | 5499        | Abiotic factor                           | 148                                 |
| $\eta_f$                                | 5499        | Abiotic                                  | 10139, 11375                        |
| $\eta_{f,b}$                            | 5499        | Abiotic stress                           | 1, 10732                            |
| $\eta_{f,i}$                            | 5499        | Ablation                                 | 2761                                |
| $\eta_m$                                | 5499        | ABR                                      | 1145                                |
| $\eta_{th}$                             | 5499        | Abscisic acid                            | 9145                                |
| $\eta_{th,Carnot}$                      | 5499        | Absolute humidity                        | 893                                 |
| $\eta_{th,Otto}$                        | 5499        | Absorbed dose                            | 3022, 4905, 8387, 8448, 8559, 11026 |
| $\eta_v$                                | 5499        | Absorber                                 | 2349                                |
| $\Phi$                                  | 12203       | Absorber tube                            | 9562                                |
| $\gamma$                                | 5499        | Absorption, $a(\lambda)$                 | 8952                                |
| $\gamma_b$                              | 5499        | Absorption coefficient                   | 309                                 |
| $\lambda_{max}^{abs}$                   | 5174        | Absorption                               | 309, 4774, 10139, 12293             |
| $\lambda_{max}^{em}$                    | 5174        | Absorptivity or absorptance ( $\alpha$ ) | 9449                                |
| $\mu_1$ , First molecular weight moment | 4617        | Abstract community                       | 3278                                |
| $\omega$                                | 12203       | Abuse                                    | 6098                                |
| $\varphi$                               | 5500        | AC motor                                 | 11523                               |
| $\Phi$                                  | 5174        | AC                                       | 9432                                |
| $\Phi^{em}$                             | 5174        | ACC                                      | 6449, 6951                          |
| $\rho$                                  | 12203       | Acceleration method                      | 9851                                |
| $\rho_{a,i}$                            | 5500        | Acceptable limit                         | 3515                                |
| $\sigma$                                | 12203       | Access time                              | 1854                                |
| $\tau$                                  | 5500        | Accessible ecosystem                     | 10796                               |
| $\theta$                                | 12203       | Accident                                 | 3515                                |
| ${}_1Q_2$                               | 5500        | Acclimation                              | 3253, 7229                          |
| ${}_1W_2$                               | 5501        | Acclimatization                          | 10732                               |
| ${}_2W_3$                               | 5501        | Accretion                                | 2761                                |
| 3 Phase boundary                        | 8328        | Accumulation                             | 2761                                |
| 3D Pose estimation                      | 10590       | Acetosyringone                           | 2583                                |
| 3D <sup>pol</sup>                       | 8126        | Acid deposition                          | 167                                 |
| ${}_3W_4$                               | 5501        | Acid drainage                            | 6665                                |
| 3'UTR                                   | 8126        | Acid neutralizing capacity (ANC)         | 167                                 |
| ${}_4W_5$                               | 5501        | Acid (rock or mine) drainage             | 6646                                |

- Acidity constant 11912  
 Acidophile 6646  
 Acoustic power level ( $I_W$ ) 12275  
 ACPE 8123  
 Acquired immunodeficiency syndrome (AIDS) 4997, 11129  
 ACS 4957  
 ACT 11068  
 Actinides 7142, 8598  
 Action level 3515  
 Action levels 9079  
 Action spectrum 9649  
 Activated carbon 3426  
 Activated sludge process 11961  
 Activation energy 4094  
 Activation overpotential 6720  
 Active material 6122  
 Active region 9469  
 Active remote sensing 309  
 Activity concentration 8387  
 Activity 3705, 8559  
 Actuator 11946  
 Acute dose 5573  
 Acute toxicity test 11220  
 AD 5296  
 AdaBoost 6951  
 Adaptation 148, 2929, 3253, 7229, 10732, 12293  
 Adaptation (with respect to climate change) 4673  
 Adaptive capacity 167  
 Adaptive control 46  
 Adaptive governance 3342  
 Adaptive management 565, 3342  
 Adaptive protection 12079  
 Adaptive response 5573  
 ADAS 64  
 ADB 1145  
 Additive genetic variance 473, 10732  
 ADG 7866  
 Adiabatic process 5216  
 Adjuvant 6291  
 ADP 1583  
 Adsorption 4774, 7006, 10139, 10962  
 Adult 3620  
 Advanced biofuel 5461  
 Advanced driver assistance system 3067  
 Advanced natural ventilation system (ANV) 6865  
 Advection 9049, 10139  
 Adverse effect 3620  
 Adverse health effect 206  
 AEM 372  
 AER 1426, 8112  
 Aerobic 10139  
 Aerodynamic diameter 167, 206  
 Aerodynamic resistance 3211  
 Aerosol extinction 309  
 Aerosol optical depth 111, 168, 9673  
 Aerosol 111, 167, 206, 309, 606, 6740  
 Aerosols 622  
 Aesthetics 10360  
 AF 1145  
 AFC 372, 3872  
 AFP 8123  
 AFP surveillance 8123  
 African easterly jet (AEJ) 5070  
 African easterly waves (AEWs) 5070  
 After shocks 2424  
 Aggregated transfer parameter ( $T_{ag} m^2 kg^{-1}$ ) 8425  
 AGM 5881  
 Agribusiness applications 4353  
 Agricultural practices 2740  
 Agricultural residues 1487  
 Agricultural waste 10000  
 Agricultural water 11873  
 Agriculturally marginal land 1268  
 Agriculture 2740  
 Agrobacterium tumefaciens 10732  
*Agrobacterium tumefaciens* 8058  
 Agrobacterium-mediated transformation 2583  
 Agroecology 149  
 Agroecosystem, agrosystem – agricultural ecosystem 5428  
 Agroecosystem 149, 2740  
 Agroforestry 149  
 Agronomic crops 2740  
 Agronomic performance/trait 10732  
 Agronomy 2740  
 AGT 7777  
 Ah Ampere hour 6938  
 Ah 5881  
 AIA (The American Institute of Architects) 5332  
 AIC 652  
 Air changes per hour (ACH) 6865  
 Air equivalence ratio 5235  
 Air mass 9673, 9705

- Air pollutants 11291  
Air pollution monitoring 168  
Air pollution policy 168  
Air pollution 11291  
Air quality 168, 11291  
Air quality guidelines 206  
Air quality index 11291  
Air quality monitoring 168, 206  
Air sparging 10139  
Air toxic 298  
Air-conditioning 9509  
Airline emission index 652  
Airtight construction 7629  
Albedo 8537, 9619, 9696, 9705  
Alcohol 987, 1025  
Aldolase 10732  
Algae 346, 7006, 9109  
Algorithm 10192  
Aliphatic 10139  
Alkalinity 7006  
Alkaloid 10636  
Allele frequency 10733  
Allele 2781, 7972, 10733  
All-electric range (AER) 10502  
Allelic exclusion 10733  
Allelopathy 149  
Allocative efficiency 2720  
Allochthonous 5047, 7006  
Allogenic 10733  
Allometric scaling 8387  
Allopolyploid Plants 10733  
Allopolyploid 10733  
Allosteric Regulation 10733  
Allothermal gasification 1426  
Alpha particle 5560, 8559  
Alpha radiation 5573, 8448  
Alternate daily cover (ADC) 5706  
Alternating current (AC) 671  
Alternative energy 10317  
Alternative fecal indicators 6319  
Alternative fuel 5461  
Alternatives analysis 1833  
Alternator 5083  
AM1.5 6566  
Ambient air 206, 11291  
Ambient and task lighting 3675  
Ambient concentration-response function 206  
Ambient 4235, 5047  
AMFC 372  
AMMA 5070  
Ammonification 6646  
Amorphous 6646, 9240  
Amphoteric 8598  
Amp-hour (Ah) 671  
Amplification 2424  
Amplitude modulation 12275  
Amplitude 2424  
An outbreak 9079  
Anabolic 10733  
Anadromous 6386  
Anaerobic digestion 1607  
Anaerobic 10139, 11932, 11946  
Analgesic 10636  
Analogue radionuclide 8387  
Analysis 11737  
Analyte 1646  
Analytical pipeline 6692  
Anchor grouting 4201  
Anchorage failure moment 6201  
Ancillary services 12254  
Ancillary services 8980  
Andesite 11613  
Aneuploid 6150, 10733  
Aneuploidy 10733  
Animal bioreactor 10864  
Animal breeding 406, 9358  
Animal cloning 10895  
Animal genetic resources 406  
Animal model (AM) 1795  
Animal welfare 406  
Annual efficiency 1351  
Annualized operating cost 1855  
Anode – (negative electrode) 708  
Anode 3886, 6498, 6720, 7731, 9885  
Anomaly 9795  
Anoxic 11932, 11946  
Anoxic sediment 7006  
Antarctic bottom water 5856  
Anthracite 2173, 8347  
Anthropocene 7229  
Anthropogenic indicator 11911  
Anthropogenic 206, 7328, 8467, 8879  
Anthropogenic radionuclides 8655  
Anthropogenic source 298

- Anthroposphere 3450  
Antibiotic 498, 10733  
Antibiotic resistance 498, 2259  
Antibody 10733, 10864  
Antilock braking system (ABS) 8848  
Antimicrobial 10852  
Antinutrients 1676, 10733  
Antioxidant 3655  
Antireflection coating layer (ARC) 9196  
Antisense RNA 10733  
Antiserum 10733  
AP 1583  
APAR 7902  
APC 90  
APC residues 11838  
APCS 5909  
Aperture 9588  
APM 7777  
Apoptosis 10636  
Apparent competition 10062  
Apparent optical properties (AOP) 8952  
Application efficiency 5619  
 $\alpha'$  12202  
APTS 90  
APU 9904  
Aquaculture 511, 5893, 9109, 10317  
Aquiclude 4201, 4414  
Aquicludes 5706  
Aquifer 4201, 4414, 9000, 11933  
Aquifer unit 4806, 5712  
Aquifers 5706  
Aquitard 5712  
Arabinoxylan 10839  
Arc plasma 8097  
Arc plasma torch 8097  
Archaea 5047  
Architecture 3367  
Arctic oscillation 10117  
Area of focus 565  
Area source 298  
Argo floats 5856  
Armature winding 11523  
Articulated bus 1855  
Artisanal fisheries 581  
ASCC 5909  
ASF 1426  
Ash 2173, 2194, 2271, 4866, 8347  
Ash residue 11737  
a-Si 9432  
Assessment process 8702  
Assimilation 12062  
Assisted reproduction 10815  
Association mapping 2528  
Associative effect 9358  
ASTER 8939  
At-grade BRT 1855  
Atmophilic 10577  
Atmosphere Model Intercomparison Project 2510  
Atmosphere 8467, 11291  
Atmospheric boundary layer (ABL) 6583  
Atmospheric boundary layer 309  
Atmospheric rivers 7245  
Atmospheric surface layer 6584  
(Atmospheric) Wind stress 7366  
Atoll 8468  
Atom economy 4584, 4616  
ATRA 7777  
Attainable yield 2720  
Attenuate 11985  
Attenuation 2424  
Attenuation depth 8919  
Attitude 12218  
Attribute 12218  
Audible sound 12275  
AUSC 2163  
Austenitic stainless steel 7193  
Autochthonous 5047, 7006  
Autocorrelation 9744  
Autoinfection 12018  
Automated guided transit (AGT) 1855  
Automotive night vision 11097  
Automotive PEMFC 8231  
Autothermal gasification 1426  
Autothermal reforming (ATR) 3955  
Autotrophic 1476, 6372  
aVDPV 8123  
Average operating speed 1855  
Average recurrence interval (ARI) or return period 10095  
Average speed 5971  
AVHRR 8939  
Aviation 652  
Avirulent 10733  
AVL 90

- Avoidance 12293  
 Azoic conditions 9174  
 B 12202  
*Bacillus thuringiensis* (Bt) 10733  
 Back cross (BC) 2528  
 Backcross 2689, 6425  
 Background level 168  
 Background levels 206  
 Backscattering,  $b_b(\lambda)$  8953  
 Bacteria 5047  
 Bacterial pathogens 8758  
 Bacteriolytic 10852  
 Bacteriostatic 10852  
 Bacterium 10694  
 Bactofection 2583  
 Baghouse 8347  
 Balance of plant (BOP) 3860  
 Balanced mechanical ventilation with heat recovery 7629  
 Balancing area 8980, 12098, 12254  
 Balancing market 12098  
 Balancing reserves 12098  
 Balneology 4162, 4353  
 Band gap 7881  
 Baroclinic 5856  
 Barotropic 5856  
 Barrage 10613  
 Barrel 4380  
 Basalt 11613  
 Base bending moment 6201  
 Base temperature 2540  
 Baseline 4201, 6951, 9000  
 Base-load demand 4190  
 Baseload plant 7296  
 Baseload plants 4235  
 Baseload 4235, 7296  
 Basic reproductive number 5347  
 Basicity 6720  
 Basin 4806  
 Bathymetry 7365  
 Battery efficiency 739  
 Battery electric vehicle 11502  
 Battery management system (BMS) 671  
 Battery pack 671  
 Battery 671, 708, 3471, 3847, 11502  
 Battery state of charge 5083  
 Battery string 671  
 Battery/battery pack 6122  
 Battery-powered electric vehicle (BEV) 10502  
 Bayes classifier 6951  
 Bayes' Theorem 2098  
 Bayesian inference 415  
 bbl 3955  
 BCMS 11068  
 Beacon, traffic pylon, guiding reflector post 3067  
 Beauty 10360  
 Becquerel (Bq) 5573, 8448  
 Bedstead barrier 5934  
 Beef Improvement Federation (BIF) accuracy 1723  
 Behavioral model 10192  
 BEMS 6865  
 Benchmark 4201  
 Beneficial insects – arthropods 149  
 Beneficial use 3029, 11737  
 Beneficiation 6665  
 Benthic boundary layer 9128  
 Benthic 1959  
 Benthos 7006, 8201  
 Best available technology (BAT) 168, 11838  
 Best linear unbiased prediction (BLUP) 389, 1795  
 Best management practice (BMP) 10095, 10139, 9174  
 Beta particle 5560  
 Beta particles 11026  
 Beta radiation 5573, 8448  
 Beta-diversity 3357  
 BEV 7847  
 bf 1583  
 BGF 11552  
 BHA (bottom-hole assembly) 4380  
 BIBAC 2583  
 BIDS™ 10261  
 Bike lane 806  
 Bike locker 806  
 Bike rack 806  
 Bike station 806  
 BIM model 10299  
 Binary power plant 4162  
 Binary vector 2583  
 Binary-cycle power station 4235  
 Bio energy 1531  
 Bioaccumulation factor (BAF) 3265  
 Bioaccumulation 822, 4819, 7006, 9156, 10657  
 Bioassay (BIOlogical ASSAY) 6354

- Bioavailability 1676, 8387  
 Bioavailable 9156  
 Bio-based products 1268  
 Biobased vs. biodegradable 9025  
 Biocenosis 8468  
 Biochar 845  
 Biochemical conversion 1198  
 Biocoal 1067  
 Bioconcentration factor (BCF) 3265  
 Bioconcentration 822, 10657  
 Bioconversion 10733  
 Biodegradable 10733  
 Biodegradation 9049, 10139, 11961  
 Biodegradation/biomineralization 1627  
 Biodeposition 9174  
 Biodiesel 921, 1607, 11429  
 Biodiscovery 3150  
 Biodiversity 939, 1531, 5047, 6216, 10085, 10765  
 Bio-economic index 1723  
 Bioenergy crops 1476  
 Bioenergy 1174, 1198, 1268, 1476, 1487, 1607, 2271  
 Bioethanol 961, 988, 1607  
 Bioextraction 9109  
 Biofloc 533  
 Biofortification 1676  
 Biofouling 581  
 Biofuel 347, 1002, 1025, 1198, 1231, 1268, 1426, 1487, 1531, 1607  
 Biofuel program 1002  
 Biofuels 10503  
 Biogas cleaning 1089  
 Biogas 1025, 1089, 1174, 1231, 1607, 1618  
 Biogas substrate 1174  
 Biogas upgradation 1618  
 Biogenic 168, 206, 8879  
 Biogeochemical cycle 7365  
 Biogeochemical cycling 7328  
 Biogeochemistry 6372  
 Biohydrogen 5116  
 Bioindicator 8387  
 Bioinformatics 10733  
 Biokinetic model 11026  
 Biokinetic studies 8387  
 Bioleaching 6646  
 Bioliquid 1025  
 Biological biohydrogen generation 5116  
 Biological contaminants 9079  
 Biological control 5428  
 Biological half-life ( $t_{1/2}^{bio}$ ) 8598  
 Biological half-life 7006, 8387, 11026  
 Biological invasion 5548  
 Biological modeling 1  
 Biological pump 6372, 7229  
 Biological survey 3265  
 Biologically effective UV radiation 11375  
 Biomagnification 822, 9156, 10657  
 Biomarker 1184  
 Biomarkers 3265  
 Biomass ash 9821  
 Biomass gasification 1661  
 Biomass 149, 347, 1002, 1025, 1174, 1198, 1231, 1269, 1298, 1476, 1487, 1531, 1607, 2271, 5116, 7006, 10733, 11429  
 Biomass residues 1174, 1487  
 Biomethane 1174, 1618  
 Biomimicry 8856, 10332  
 Biomineralization 10403  
 Biomining 6646  
 Biomitigative services provided by extractive aquaculture 542  
 Bio-oil 11429  
 Biopharmaceuticals 8058  
 Biophilia 3675, 10261  
 Bioprocess 10733  
 Bioreactor 6519  
 Bioremediation 1627  
 Bio-SNG 1607, 1661  
 Biosphere 168  
 Biosynthesis 822, 10734  
 Biosynthetic 10734  
 Biota 6633, 7006, 7229  
 Biotechnology 10734  
 Biotic factor 149  
 Biotic ligand model (BLM) 10051  
 Biotic 10139, 11375  
 Biotic Stress 10734  
 Biotransformation 12293  
 Biotroph 2559  
 Bioturbation 7006, 8387  
 Bioturbation transport 9128  
 Bioventing 10139  
 Bi-phase expander 4235  
 Bipolar plate 5881, 7694  
 Bitumen 7457, 7798

- Bituminous coal 2173, 8347  
 BL 5173  
 Black body 2349  
 Black carbon 845  
 Black liquor 1174  
 Blackbody (BB) radiation 9412  
 Blackbody radiator 9795  
 Blade 7393  
 Blanket 7086  
 Blastocyst 6150  
 Bleed 4201  
 Blocking, blocking losses 2349  
 Blood stage 6291  
 Blow out 4380  
 BLUP (best linear unbiased prediction) 7972  
 BLUP 473, 9358  
 B/M 4616  
 BMEP 5500  
 BMGF 11068  
 BOD 1145, 5909, 11933  
 BOE 3955  
 Bogie or truck (United States) 1855  
 Boiler ash 11720  
 Boiler efficiency 1351  
 Boiler 1351  
 Bone morphogenetic proteins (BMPs) 10886  
 BOP (blow-out preventer) 4380  
 BOP 7866  
 BoP 9934  
 bOPV 8123  
 BORDA 1145  
 BOS 9432  
 Bottom ash 11720, 11737  
 Boundary layer 11311  
 Boundary layer pressurized balloon (BLPB) 5070  
 Boussinesq approximation 7366  
 bpy 5173  
 Brackish water 11933  
 Brackling 6201  
 Brake controller 8848  
 Brake-by-wire 8848  
 Braking energy 8848  
 Braking forces 11481  
 Braking performance 11481  
 Braking system 11481  
 Branding 1833  
 Brayton cycle 6804, 7086  
 Breakdown 11158  
 Breakthrough time 3501  
 BREEAM 6865  
 Breed 389  
 Breeder 7086  
 Breeding nuclei 8307  
 Breeding ratio 4050  
 Breeding value (BV) 1795  
 Breeding value 415, 473, 2781, 8307, 9359  
 BREF 11838  
 Brightening 9731  
 Brightness contrast/glare 2846  
 Brine 2897, 4235  
 Briquetting 1067  
 Broadband radiation 9673  
 Broken arrow 8387  
 Brownfield 11362  
 BRT 90, 1890  
 Brushless DC motor 11523  
 BSL 8123  
 BTDF 2804  
*Bt*-expressing transgenic crops 10713  
 BtL fuels 921  
 BtL 1039, 1584  
 Btu 2163, 3955  
 Bubble pressure 7866  
 Bubbly jet 10975  
 Building and street scales 11263  
 Building Environmental Assessment Method (system or scheme) 8702  
 Building information model 10192  
 Building information modeling (BIM) 10299  
 Building life cycle 10192  
 Building performance 10192  
 Build-operate-transfer (BOT) 1855  
 Buildup factor 8537  
 Bulk coefficients 594  
 Bulk heterojunction 7553  
 Buoyant jet 10975  
 Buried tritium 10997  
 Burnup 7193  
 Bus corridor 1833  
 Bus lane 1833, 1855  
 Bus 806  
 Bus priority 1833  
 Bus rapid transit (BRT) or Bus transit with high level of service (BHLS) 1855

- Bus rapid transit (BRT) 1810  
 Bus rapid transit 5971, 10923  
 Bus rapid transit vehicle 1810  
 Bus transit system (BTS) 1855  
 Buses 4945  
 Busway 1833  
 Butanol 1607  
 Buy America 1811  
 By-catch 6179  
 By-product of a reaction 4616  
 By-product 11699  
 °C 2163  
 c 7181  
 C Rate 7546  
 C3 Grasses 6020  
 C<sub>3</sub> photosynthetic system 10390  
 C3 2615  
 C3-plants 1476  
 C4 Grasses 6020  
 C<sub>4</sub> photosynthetic system 10390  
 C4 2615  
 C4-plants 1476  
 CAA 5909  
 Cable system 11158  
 Cadmium telluride (CdTe) solar cells 7932  
 Calcification 7229  
 Calcium carbonate saturation horizon 7229  
 Caldera 4162, 11633  
 Calibration 11455  
 Callus 10734  
 Calorie 4162  
 Calorific value 2173, 8348  
 Calorimetry 7201  
 Calvin Cycle 10734  
 Calving 10886  
 CAMARTEC 1145  
 CAN 6951  
 Cancer 5573  
 Candidate gene 473, 6425  
 Cap rock 4162  
 Capacity building 565, 6692  
 Capacity factor 2349, 4191, 4235  
 Capacity, installed (or Nameplate) 4235  
 Capacity markets 12254  
 Capacity 708, 4235, 6122, 7546, 11503  
 CAPEX 1584  
 Capital assistance/expenditures 1811  
 Capital cost 4340  
 Capsid 8123  
 Capsomere 8123  
 Carbon abatement (CA) 845  
 Carbon capture and sequestration (CCS) 2149  
 Carbon Credit 845  
 Carbon cycle 2510  
 Carbon dioxide capture and storage (CCS) 4119  
 Carbon dioxide (CO<sub>2</sub>) 4754, 8348  
 Carbon (dioxide) equivalent 845  
 Carbon dioxide equivalents (CO<sub>2,eq</sub>) 4755  
 Carbon dioxide 4235  
 Carbon dioxide removal (CDR) 10117  
 Carbon geoengineering 4104  
 Carbon leakages 1487  
 Carbon monoxide (CO) 8348  
 Carbon monoxide 206  
 Carbon nanotube 3426  
 Carbon neutral net-zero and the 2030 challenge 3675  
 Carbon selectivity 3933  
 Carbon sequestration 161, 7267  
 Carbon stability factor (CSF) 845  
 Carbon structure and texture 6769  
 Carbonate rocks 5645  
 Carboniferous 2173  
 Carbonization 7866  
 Carbon-rich soils 1488  
 Carcinogen 3620, 11026  
 Carnot cycle 6805  
 Carnot efficiency 9588  
 Carpools 4945  
 Carrying capacity 565, 1959  
 Cartagena protocol on biosafety (CPB) 2286  
 Cascading 6098  
 Casein micelle 10852  
 Cassette 2583  
 CAT 5173  
 Catabolic 10734  
 Catadromous 6386  
 Catalyst 921, 1025, 7585, 10734  
 Catalytic membrane reactor (CMR) 3955  
 Catalytic oxidizer 10139  
 Catchment (or river basin) 5817  
 Catchment 7006, 8634, 8688  
 Cathode – (positive electrode) 708  
 Cathode 3886, 6498, 6720, 7527, 7731, 9885  
 Cathode processor 7142



- Cave 5645  
 CB (carbon black) 9588  
 CBA 4784, 11759  
 CBD 5971  
 CCR-5 4997  
 CCS 2163, 4957  
 CCV 11158  
 CD 8112  
 CD155 or PVr 8123  
 CD4+ 4997  
 CD4+ T cell 4997  
 CDC 8123  
 cDNA 2689, 10815  
 CDR 8112  
 CdS 9432  
 CdTe 1977, 9432  
 CEA 4784  
 CED 1584  
 Cell cycle 6150, 7217  
 Cell 671, 708, 6122  
 Cellulose 6020  
 Celsius temperature (°C) 893  
 Cementitious 3821  
 CEMS 4957  
 Cenospheres 3821  
 Centerline 5645  
 Central receiver system, concentrating receiver system (CRS) 2349  
 Centrifugal contactors 7142  
 Ceramic glass 8794  
 Ceramic waste 7142  
 CERCLA 2005  
 Cereal crops 1488  
 Cereals 4550  
 Certification 8702  
 Certification system 1488  
 Cetane number 1025  
 CFAR 6951  
 CFBC 2163  
 CFD models 6584  
 CFD 4957, 5296  
 Cfm (cubic feet per minute) 5332  
 CFR 11068  
 CH<sub>4</sub> 1039, 1584, 7866  
 Chalcopyrite compounds 9394  
 Chalcopyrite solar cells 7932  
 Challenge trial 6291  
 Channelization device 5934  
 Chaotic system 2510  
 Charcoal 846  
 Charge depleting (CD) 10503  
 Charge reserve 6938  
 Charge sustaining (CS) 10503  
 Chemical contaminants 9079  
 Chemical flux 9129  
 Chemical inputs 7328  
 Chemical mobility 9129  
 Chemical oxygen demand (COD) 1174  
 Chemical sinks 7328  
 Chemical structure of carbon dioxide 10169  
 Chemical transport model 10129  
 Chemisorption 4584, 10139  
 Chemometrics 5382  
 Chemotherapeutants 6354  
 Chernobyl 10403  
 Chimera 7217  
 Chimeric animal 10895  
 Chimeric 2583  
 Chimerism 10815  
 Chlorofluorocarbon (CFC) 10130  
 Chlorofluorocarbons (CFCs) 168  
 Chloroplast 1476, 10734, 11375  
 CHP 1426, 4235, 5296, 7866, 9934, 11759  
 CHP unit 1089  
 CHP/DHC 5296  
 CHP-F 1584  
 Chromatin 6150, 7217  
 Chromophore 11375  
 Chromosomal recombination 2689  
 Chromosome aberrations 11026  
 Chromosome 11026  
 Chromosphere 9795  
 Chronic dose 5573  
 Chronic exposure 11026  
 Chronic toxicity test 11220  
 Chronosequence 3278  
 CIGS 9432  
 Circadian rhythm 10852  
 Circular jet 10975  
 CIS 9432  
 Cistern 8688  
 Cistron 10734  
 City 11325  
 Classification 3170, 8794

- Clausius–Clapeyron equation 7245  
 Clay 4584  
 Clean development mechanism 4474  
 Clean gas 1445  
 Clearness index 9744  
 Clear-sky index 9744  
 Clear-sky radiation 10621  
 Clementsian succession 3278  
 Climate change 168, 1488, 2078  
 Climate forecast 2510  
 Climate model 2510  
 Climate policy (greenhouse gas mitigation policy) 5398  
 Climate 111, 622, 5358  
 Climate projection 2510  
 Climate sensitivity 622, 2098  
 Climate-based daylight modeling 2804  
 Climatology 2119, 6584  
 Climax community 3278  
 Clone 7217, 10734  
 Cloning 10864  
 Cloning vector 2689  
 Closed dumps 5706  
 Closed fuel cycle (full recycle) 4050  
 Closed loop control 11946  
 Closed loop system 4133  
 Closure plan 5733  
 Cloud condensation nuclei 9696, 9795  
 Cloud droplet activation 111  
 Cloud tower 7866  
 CMIP-3 2098  
 CML 1584  
 CMOS image sensor 11097  
 CMOS 6951  
 CO 1039  
 Co 1039, 1584  
 CO<sub>2</sub> capture 1909, 2149  
 CO<sub>2</sub> enhanced oil recovery (EOR) 2149  
 CO<sub>2</sub> equivalent 1488  
 CO<sub>2</sub> 1039, 1584, 2061, 2163  
 Coal bed methane (CBM) 7446  
 Coal combustion by-products (CCPs) 3821  
 Coal mineral matter 3821  
 Coal 3821, 8348  
 Coal preparation 2174  
 Coal washing 6665  
 Coalification 2174  
 Coal-to-liquids (CTL) 2222  
 Coarse particles 11291  
 Coastal and marine spatial planning 2259  
 Co-combustion 2271  
 COD 1145, 5909  
 Coding sequence 4013  
 Codon bias 8123  
 Codon 8123, 10734  
 COE 2163, 3397, 7156  
 Coefficient of performance (COP) 9509  
 Coenzyme 10734  
 COEX™ 7142  
 Cofactor 10734  
 Cogeneration 1400, 6805, 8081  
 Cognitive vehicle 2463  
 Cohort study 8879  
 Cold seep 6405  
 Cold turkey 10636  
 Cold-water coral reef 6405  
 Collaborative planning 12218  
 Collapse 5645  
 Collection 11655  
 Collection vehicle 11655  
 Collector area: Aperture, absorber, and gross area 9449  
 Collector loop (PTC) 7619  
 Collector mean temperature (T<sub>m</sub>) 9449  
 Colloid 8387  
 Colored or chromophoric dissolved organic material (CDOM) 8953  
 Combined cycle power plant 6805  
 Combined heat and power (CHP) 6805, 8174  
 Combined heat and power generation (CHP) 4755  
 Combined heat and power plant (CHP Plant) 8081  
 Combined heat and power 1232  
 Combustion efficiency 1351  
 Combustion (of biomass) 1607  
 Combustion 1231, 2271, 5501, 11851  
 Combustion residues 5235  
 Combustor 6805  
 Comfort 1833  
 Command and control 168  
 Commensal organism 5047  
 Commensal 6319  
 Commercial solid wastes (CSW) 5707  
 Commercial speed 1834  
 Commingled operation 5950

- Comminution 8795  
 Committed dose 8559  
 Commodity chemicals 7585  
 Common relevant picture 2463  
 Community 6646, 12218  
 Community-owned water resources 2319  
 Commuter rail 5971  
 Commuter rail service 1811  
 Compacted clay liner (CCL) 5747  
 Companion animal 8073  
 Comparative genomics 10734  
 Compartment 7006  
 Compartment model 7006  
 Competition 149, 10035, 10062  
 Complementary DNA (cDNA) 10734  
 Complementation 2689  
 Complex dose 3596  
 Complex hybrid vehicles 5083  
 Composite materials 6896  
 Composite 1723  
 Composition analysis 10734  
 Composting 9979  
 Compressibility 5712  
 Compressible gas 3933  
 Compressor 6805  
 Computer vision 11455  
 Concatemer 2583  
 Concentrate (also called retentate) 11873  
 Concentration factor 8387  
 Concentration polarization 2897  
 Concentration 10954  
 Concentration ratio (CR) 8425, 11220  
 Concentration ratio 2349  
 Concentration-response functions (CRFs) 168  
 Concordiasi 5071  
 Concrete community 3278  
 Concrete 3821  
 Condensate 4235  
 Conduction band 7881  
 Conduction 4162  
 Conduction-dominated systems 4191  
 Conductivity 7006  
 Confidence interval 7006  
 Confined aquifer 10139  
 Confined disposal facility (CDF) 3029  
 Confinement 10796  
 Confounding factor 9156  
 Congestion pricing 5021  
 Conjugated molecule 7553  
 Conjugation 2583  
 Connectance 3299  
 Connectivity 939  
 Consequence 4119  
 Conservation agriculture (CA) 5619  
 Conservation medicine 6179  
 Consist 1855  
 Consolidated sustainability metrics 168  
 Constructed wetland (CW) 11891  
 Construction and Demolition Debris 11699  
 Construction and demolition waste 10000  
 Consumer 149, 3306  
 Contaminant 2430, 3029, 12293  
 Contaminant fate and transport 4774  
 Contaminant or pollutant 2005  
 Contaminants 11737  
 Contaminated land/water 6646  
 Contaminated sediment or contaminated dredged material 3029  
 Contaminated soil 2430  
 Contamination 1174, 3515  
 Contemporary groups 436  
 Contextual map 3170  
 Contrails 652  
 Contrast sensitivity 3135  
 Control and safety systems 3397  
 Control area 12098  
 Control (power split) strategy 3471  
 Control simulation 2510  
 Convection 2016, 2031, 4163, 10955, 10962  
 Convection-dominated systems 4191  
 Convention on biological diversity (CBD) 2286  
 Conventional breeding 1, 1676, 10734  
 Conventional imbibing 8174  
 Conventional oil and gas 7446  
 Conventional treatment 11873  
 Conventional vehicle 10482  
 Convention/protocol/treaty 2286  
 Conversion efficiency 1977  
 Conversion route 1199  
 Converter 5083, 7086, 12135  
 Conveyor belt 2510  
 Coolant 7086  
 Cooling 9509  
 Cooling tower 4235

- Cooperative group (CG) 2463  
 Coprocessing (of coal) 2222  
 Co-product allocation 5893  
 Coral reef 2489  
 Core plate 7193  
 Core 4179, 7086  
 Coreceptor (CCR-5 or CXCR-4) 4997  
 Coriolis force 6584  
 Corn stover 1269  
 Cornell medical index 10261  
 Corridors and stepping stones 939  
 Corticosteroids 7973  
 Cosmogenic 8468  
 Cost of greenhouse gas mitigation (economic cost) 5398  
 Cost of saved primary energy 9509  
 Cost 4235  
 Cost-benefit analysis 3515, 10448  
 Coulomb force 8559  
 Coulombic efficiency 671, 9293  
 Coumarins 10734  
 Counter-footprint 9025  
 Countermeasure 3515  
 Counterselectable marker 2583  
 Coupled chemistry-climate model (CCM) 10130  
 Cover 5747  
 CPC (compound parabolic concentrator) 9588  
 CPC 9562  
 CPE 8123  
 CPOx 3955  
 Cr poisoning 9851  
 Cradle to Cradle® 8856, 9026  
 Crassulacean acid metabolism (CAM) plants 1476  
 C-rate 671  
 CRE/*loxP* 10671  
 Cretaceous 2174  
 Critical crop N uptake 2661  
 Critical group 8468  
 Critical load 168  
 Critical natural capital 168  
 Critical period 3620  
 Critical plant N concentration 2661  
 Critical 3787, 7086  
 Critical toxicity value (CTV) 11220  
 Crop management 6201  
 Crop resistance to pests 5428  
 Crop rotation 1098  
 Crop structure 10035  
 Crop trait 2689  
 Cross section 11201  
 Crossbreeding 10734  
 Cross-linked polyethylene (XLPE) 11158  
 Cross-subsidization 1855  
 Crust 4179  
 Cryoconservation 7973  
 Cryosphere 280  
 Crystalline 6646  
 Crystallization 11582  
 CS 8112  
 CSE 11325  
 CSES 1145  
 c-Si 9432  
 CSP (concentrating solar power) 9588  
 CSP 9758  
 $C_d$  12202  
 $C_l$  12202  
 $C_p$  12202  
 $C_{p,b}$  5500  
 $C_\theta$  12202  
 $C_T$  12202  
 $C_{v,b}$  5500  
 CTD (conductivity-temperature-depth) 4909  
 CTD 10390  
 CtL 1584  
 CTL 3955  
 CTRV 6951  
 Cullet 8795  
 Cultivate 11985  
 Curbside collection 11655  
 Current collector 6122  
 Cut point 2194  
 Cut size 2194  
 Cut-in wind speed 7393  
 Cut-off-wall 10403  
 Cut-out wind speed 7393  
 CV 1426, 5296  
 CVD 9293  
 cVDPV 8123  
 CVT 11523  
 CW with free water surface 11891  
 CW with horizontal subsurface flow 11891  
 CW with vertical flow 11891  
 CWP 7296  
 CXCR-4 4997

- Cyanobacteria 4819, 6372  
 Cyberinfrastructure (CI) 6692  
 Cyclability 7546  
 Cycle life 6122  
 Cycle 6122  
 Cycling 3306  
 Cyst/Encapsulation 12018  
 Cyto- 10734  
 Cytokines 10734  
 Cytoplasm 7217  
 Cytoplasm 6150  
 D 12202  
 Dacite 11613  
 Daily soil cover (DSC) 5707  
 DALY 1298  
 Dam failure 2788  
 Dam 2788  
 Damage caused by a pest 5428  
 Damage 3233  
 Dangerous situation 2463  
 Darrieus rotors 3397  
 DART 10403  
 Data alignment 3170  
 DAWT 3397  
 Day-ahead market 12254  
 Daylight autonomy 2846  
 Daylight factor 2804  
 Daylight metric 2804  
 Daylight 2804  
 DC motor 11523  
 DC 9432  
 DCS 4957  
 DDGS 988, 1039  
 DDT 11068  
 De novo synthesis of PCDD/F 6975  
 DE 1039, 1039, 1584  
 Dead zones 6354  
 Deadheading 1855  
 Debris avalanche 11613  
 Decay chain 8468  
 Decision support system (DSS) 9316  
 Decision support systems (DSS) 5619  
 Decommissioning 3515, 6633, 7055  
 Decomposer 149  
 Deconstruction 2391  
 Decontamination 3515, 7056  
 Dedicated energy crops 1269  
 Dedicated lines 4929  
 Deep liquid level 4202, 9000  
 Deep liquid zone 4202, 9000  
 Deep water formation 2510  
 Deep western boundary current 5856  
 Default value 7006  
 Defects 9394  
 Defense 12293  
 Deficit irrigation (DI) 5619  
 Defined use 9026  
 Deforestation 1531  
 DEFRA 5296  
 Degradation 7694  
 Degree of asymmetry 4616  
 Degree of convergence 4616  
 Dehydration avoidance 2638  
 Dehydration tolerance 2639  
 Dehydroxylation 4584  
 De-inking 8795  
 Deliberate release 10765  
 Demand 4235  
 Demand response 2977, 10448  
 Demographic change 5835  
 Demonstration project 9509  
 Denitrification 6646, 11933, 11946  
 Dense medium 2194  
 Density dependence 10062  
 Density 10035, 10955  
 Density, urban density 5786  
 Deoxyribonucleic acid (DNA) 5573  
 Depleted uranium (DU) 11220  
 Depletion 9026  
 Depolarization ratio 309  
 Deposit 8634  
 Deposition 10997  
 Depth of discharge (DoD) 671  
 Depth of discharge 11503  
 Depuration 822, 4819  
 Derivatized 3150  
 Desalination 9758, 11933  
 Desertification 2929  
 Design flow 10095  
 Design for environment (DfE) 3443  
 Design-build model 1855  
 Design-build-operate-maintain (DBOM) model 1855  
 Desorption 10962

- Destination vector 2583  
 Destructive assay 7201  
 Detailed balance 9412  
 Detection and attribution 2098  
 Detection time 7201  
 Detention 8688  
 Deterministic effect 5573  
 Deterministic effects 11026  
 Detritivores 6309  
 Developer 4202  
 Development plan 5785  
 Developmental disorders/effects 3620  
 Devonian 2174  
 Dewar 4380  
 DEWATS 1145  
 Dew-point temperature (DPT) 893  
 DG 9904, 9934  
 DHC 5296  
 Diafiltration 8024  
 Diagnostic test 11158  
 DIAL 309  
 Diametrical line (or route) 1855  
 Diapycnal mixing 7366  
 Diatom 6372  
 Diatoms 4819  
 Di-benzo-furan 10577  
 Dicotyledonous 1477  
 Dielectric loss 11158  
 Diesel gallon equivalent (DGE) 5462  
 Diesel IC engine 5083  
 Diet 10734  
 Differentiation 7217  
 Diffraction 6067, 8953  
 Diffuse attenuation coefficient,  $K(\lambda)$  8953  
 Diffuse attenuation coefficient 8919  
 Diffuse fraction 9795  
 Diffuse hemispherical radiation 9673  
 Diffuse sources of air pollutants 11291  
 Diffuser 10975  
 Diffusion coefficient 2016, 2031, 2048, 10955, 10962  
 Diffusion 2016, 2031, 2048, 7006, 7527, 10403, 10955, 10962  
 Diffusivity 2016  
 Digital elevation model (DEM) 10621  
 Digital map 6951  
 Dilution 10955  
 Dimictic lake 5673  
 Dimictic 7006  
 Dimming 9731  
 DIMS 3108  
 Dinoflagellates 4819  
 Dioxin 10577  
 Dioxins (PCDD/F) 11720  
 Diploid 6150, 10734  
 Dirac delta 2031, 2048, 10962  
 Direct coal liquefaction (DCL) 2222  
 Direct current (DC) 671  
 Direct DNA transfer 2583  
 Direct effects (or impacts) 10796  
 Direct farm income benefit 4433  
 Direct gain 7640  
 Direct normal irradiance, beam irradiance 7619  
 Direct normal irradiation (DNI) 2349  
 Direct normal radiation 9673  
 Direct normal solar irradiance 9589  
 Direct potable reuse 11873  
 Direct retorting 7457  
 Direct spectral irradiance  $E_{\lambda,D}$  9649  
 Direct use 4179, 4235  
 Direct/diffuse light 2846  
 Directional drilling 4380  
 Directivity 12275  
 Direct-use material 7201  
 Disaster waste 10000  
 Discharge 4221  
 Discourse 12218  
 Disease resistance/susceptibility 2963  
 Dish 6031  
 Dislocations 9196  
 Disparity 6951  
 Dispatch 4235  
 Dispatchability, dispatchable 2349  
 Dispatchable electricity 4191  
 Dispersal 939  
 Dispersion coefficient 2031  
 Dispersion 2016, 2031, 9049  
 Dissimilatory reduction 6646  
 Distraction 3108  
 Distributed energy resources (DER) 5134  
 Distributed generation (DG) 5134  
 Distributed generation 2977, 10448  
 Distribution coefficient ( $K_d$ ) 8387  
 Distribution grid 2977  
 Distribution management system 2977

- Distribution substation 2977  
 Distribution system 2977  
 Distribution uniformity 5619  
 District heating (DH) 11768  
 District heating 4353  
 Disturbance 149, 3326, 6216  
 Disulfide 3655  
 Ditchline 5645  
 Diurnal 8879  
 Divergence-with-gene-flow model of speciation 3357  
 Diversion 7201  
 Diversity 149  
 DM 1145  
 DME 1039, 1426, 1584, 3955  
 DMFC 372  
 dmgBF<sub>2</sub> 5173  
 dmgH 5173  
 DM/oDM – (organic) dry matter 1098  
 DNA adduct 3596  
 DNA (deoxyribonucleic acid) 4997  
 DNA 11026  
 DNA sequencing 10734  
 DNI 9432, 9744  
 DO 11946  
 DoD 8112  
 DOE 2163, 2222, 3955, 10935  
 Domain 4013  
 Domestication 149, 2689  
 Dominant species 149  
 Dominant-negative molecule 10852  
 Donor cell 6150  
 Dopamine 10636  
 Dopant 7881  
 Doping 7881  
 Doppler 6951  
 Dormancy 9145  
 Dose and dose rate effectiveness factor (DDREF) 11026  
 Dose conversion coefficient 8387  
 Dose equivalent 8560  
 Dose (exposure)–response relationship 3620  
 Dose mean lineal energies 11026  
 Dose 3515, 8537, 10997, 11026  
 Dose rate 11026  
 Dose-response assessment 6605  
 Dosimeter 3022, 4905  
 Dosimetric model 11026  
 Dosimetry 4905, 11026  
 Double envelope 3675  
 Doubly fed induction generator system (DFIG) 12135  
 Downdraft combustion 1351  
 Downflow 4414  
 Downscaling 8903  
 Downscaling methods 6584  
 dpb 5173  
 DPF 244  
 dpgBF<sub>2</sub> 5173  
 dpp 5173  
 dpq 5173  
 Drag 3397  
 Draught (Draft) 7296  
 Dredged material 3029  
 Dredging collections 3151  
 Dredging 3029  
 Drift eliminator 4235  
 Drift 4235  
 Driftsonde 5071  
 Drill collars 4380  
 Drive cycle 5083, 10542  
 Drive (PTC) 7619  
 Driver Assistance System (DAS) 2464, 3099, 10590, 11098  
 Driver Behavior Questionnaire (DBQ) 3099  
 Driver biological 3108  
 Driver Characteristics 3099  
 Driver mutation 3596  
 Driver physical 3108  
 Driving performance 3108  
 Driving simulator 3082  
 Drop-off center 11655  
 Drought 2929  
 Dry deposition 606, 8879  
 Dry FGD 8348  
 Dry process 8715  
 Dry steam 4235  
 Dry-bulb temperature (DBT) 893  
 Drylands 2929  
 Dryout 4202  
 DSM 7847  
 DTC 11523  
 Dual-mode buses 1818  
 Dual-mode 7777  
 Dual-use technology 7201

- Dunite 1909  
 Durability 7694, 11582  
 DVC 5296  
 Dye sensitization 7881  
 Dye sensitized solar cells (DSSC) 7932  
 Dynamic downscaling 6584  
 Dynamic envelope 5934  
 Dynamic mapping 3171  
 Dynamic model 7006  
 Dynamic models 1927  
 Dynamic range 11098  
 Dynamic statistical downscaling 6584  
 Dystrophic 7006  
 EA 5173  
 Early brightening 9731  
 Earth Observing One (EO-1) 8939  
 Earth system model 2510  
 Earthquake fault 3233  
 Earthquake 2424  
 Earth's orbit 9619  
 Earth's revolution 9619  
 EAST 7156  
 $E_{\text{auxiliaries}}$  4617  
 Ebb tide 10613  
 EBD (evidence-based design) 5332  
 EC framework program 7936  
 EC 3872  
 $E_c$  7181  
 ECA 7866  
 Eco-efficiency analysis 6633  
 Ecoliteracy 8856  
 Ecological aesthetics 10361  
 Ecological aquaculture 9174  
 Ecological footprint 6853, 9026  
 Ecological forecasting 2259  
 Ecological goal function 3306  
 Ecological half-life ( $t_{\frac{1}{2}}^{\text{eco}}$ ) 8598  
 Ecological half-life  $t_{\frac{1}{2}}$  7006  
 Ecological sustainability 8856  
 Ecology 6216, 8856, 11325  
 Economic biomass potential 1174  
 Economic injury level of a pest 5428  
 Economic potential 1532  
 Economic threshold of a pest 5428  
 Economy of scale 1855  
 Ecosystem approach to aquaculture (EAA) 1959  
 Ecosystem concept 8856  
 Ecosystem dynamics 6216  
 Ecosystem engineer 3299  
 Ecosystem functioning 3300  
 Ecosystem goods and services 2929  
 Ecosystem 149, 168, 533, 1531, 2740, 5817, 6216, 7006, 8388, 8856, 9109, 10085, 10765, 11325  
 Ecosystem service 10085  
 Ecosystem services 3201, 3313, 4673, 5835, 10765  
 Ecosystem-based management (EBM) 1959  
 Ecotherm 11375  
 Ecotilling 2720  
 Ecotone effect 3358  
 Ecotone 3326, 3358  
 ECRH or ECH 7156  
 ECS 4957  
 Ectotherm 5047  
 $EC_x$  11220  
 Ecycling 3443  
 ED 5173  
 Eddy 5856  
 Edge city 5971  
 Edge effect 3358  
 Edible vaccines 8073  
 $E_{\text{excess}}$  4617  
 E-factor 4584  
 E-factor with respect to mass ( $E_m$ ) 4617  
 E-factor with respect to molecular weight ( $E_{mw}$ ) 4617  
 EFDA 7156  
 Effective dose 8560  
 Effective half-life 7006  
 Effective MWCO 10530  
 Effective population size ( $N_e$ ) 1795  
 Effective population size ( $N_e$ ) 473  
 Effective population size 406, 7973  
 Effective root zone 1098  
 Effective stress 5712  
 Effective surface albedo 11149  
 Efficiency of daylight 2846  
 Efficiency of energy generation 8097  
 Efficiency 4235, 6805, 7619, 7866  
 Efficiency (PTC) 7619  
 Effluent 4235  
 Effusive 11633  
 EfW 4957, 5296, 11759  
 EGS 3501, 4235  
 EGSB 1145  
 EGU 5909



- EIA 2163  
 eIPV 8123  
 EJ 1039, 1489  
 $E_{\text{kernel}}$  4617  
 Ekman transport 5856  
 El Nino-Southern Oscillation 2510  
 El Niño and Southern Oscillation (ENSO) 6740  
 El Niño-Southern Oscillation (ENSO) 5358, 7366, 9795  
 Elasticity of demand 1855  
 Electric coupling 3367  
 Electric double layer capacitor 6769  
 Electric load 5103  
 Electric storage cookers 9486  
 Electric vehicle (EV) 3860  
 Electric vehicle 3367, 9293, 10482, 11503  
 Electrical conductivity 2934  
 Electrical trees 11158  
 Electricity generation efficiency 8081  
 Electricity generation 1232  
 Electrocatalyst 7731, 8204, 8231  
 Electrocatalytic reaction 2934  
 Electrochemical capacitor (EDLC) 3426  
 Electrochemical capacitor 3847  
 Electrochemical remediation 10403  
 Electrode-active material 7546  
 Electrokinetic screens 10403  
 Electrolyte 3886, 6122, 6498, 6720, 6938, 7546, 9886  
 Electrolyte membrane 8328  
 Electrolyte window 739  
 Electromagnetic spectrum, visible (VIS) and near-infrared (NIR) 11098  
 Electromigration 10403  
 Electromobility 3847  
 Electromotive force (emf) 7546  
 Electron acceptor 7553  
 Electron donor 7553  
 Electron volt (eV) 5560, 7086  
 Electron/hole 9562  
 Electronic fare payment 90  
 Electronic waste, e-waste and waste electrical and electronic equipment (WEEE) 3443  
 Electroosmosis 10403  
 Electrophile (or electrophilic chemical) 3655  
 Electrophoresis 10403  
 Electrorefiner 7142  
 Electrostatic precipitator (ESP) 8348  
 Electrowinning 6646  
 ELISA 1646  
 ELP 8073  
 ELPylation 8073  
 Embodied energy 2391  
 Embryonic development 6790  
 Embryonic germ cell 10864  
 Embryonic period 3620  
 Embryonic stem cell 10864  
 Emergence 8123  
 Emergency 3515  
 Emerging contaminants 2078  
 Emerging disease 5358  
 Emergy analysis 6853  
 emf 11523  
 $e^-$  5881  
 Emission standard 244  
 Emission trading 652  
 Emissions 206, 5235, 6805, 7822, 11291  
 Emissions standard 4236  
 Emissivity ( $\epsilon$ ) 9449  
 Emittance (M) 9449  
 Empirical model 2098  
 EMS 10935  
 Endemic 8123  
 Endemic stability 5358  
 Endocrine disrupting compounds 2078  
 Endocrine disrupting compounds (EDCs) 11961  
 Endogenous 10852  
 Endopeptidase 10852  
 Endothermic 9588  
 Endotoxin 5047  
 Energy and power 8373  
 Energy balance 1002, 10886  
 Energy capacity 11503  
 Energy conversion efficiency 8081  
 Energy Conversion technology 9000  
 Energy crops 1174, 1488, 1607, 6020  
 Energy density or specific energy 708  
 Energy density 3426, 9293, 9821  
 Energy efficiency 1488, 4236  
 Energy equivalence factors 11838  
 Energy forest trees 1488  
 Energy from ocean currents 6345  
 Energy from waste (EfW) 11681  
 Energy grasses 6020  
 Energy 1488, 4236

- Energy source 4236  
 Energy storage 5103  
 Energy sustainability 4050  
 Enforcement 168  
 Engineered (or enhanced) geothermal systems (EGS) 4191  
 Engineering structures 3233  
 Enhanced electrochemical remediation 10403  
 Enhanced (engineered) geothermal systems (EGS) 4163  
 Enhanced geothermal system (EGS) 4414  
 Enhanced geothermal systems 4179  
 Enhanced weathering 1909  
 Enrichment 11201  
 Enrichment tails (also depleted uranium) 11202  
 Ensemble simulations 2510  
 Enteric virus 11985  
 Enterococci 6319  
 Enteroviruses 8123  
 Enthalpy 5216  
 Entry clone 2583  
 Envirocats<sup>TM</sup> 4584  
 Environment 1231, 2004, 2740, 8468  
 Environmental conditions 7425  
 Environmental control 7822  
 Environmental education 10014  
 Environmental effects (or impacts) 10797  
 Environmental effects 6759, 7822  
 Environmental exposures and environmental hazards 3620  
 Environmental harm 10765  
 Environmental impact 10713  
 Environmental monitoring 4880  
 Environmental (or green) assessment 8702  
 Environmental perception 3067  
 Environmental pollutants 9079  
 Environmental stability (microorganism) 11985  
 Environmental surveillance (as related to polioviruses) 8123  
 Enzymatic hydrolysis 961  
 Enzyme 1476, 10734  
 $E_{\text{overall}}$  (or  $E_m$ ) 4617  
 EP 1584  
 EPA 9110  
 EPBT 9432  
 Ephemeral region 9469  
 EPI 8124  
 Epicenter 2424, 4202, 4414  
 Epidemic 5047, 7383, 8124  
 Epidemiological case studies 10261  
 Epidemiological 2259  
 Epidemiology 8758, 9156, 11985  
 Epigenetic effects 8058  
 Epigenetic 3253  
 Epigenetic regulation 7217  
 Epigenetics 1, 2540, 10734  
 Epilation 4905  
 Epilimnion 7006  
 Epipolar line 6951  
 Episodic 6216  
 Episomal 2583  
 Epistasis 6425  
 Epitaxy 9412  
 Epitopes 8124  
 EPRI 2163  
 EPT index 3265  
 eq 1039, 1584  
 Equilibrium climate sensitivity 2510  
 Equinox 9619  
 Equivalence ratio 11429  
 Equivalent dose 3022, 4905, 8448  
 Equivalent water thickness 4563  
 Equivalent weight 8328  
 Eradication 5548, 8124  
 Erosion 3705  
 Erythema 4905, 12018  
 Erythematous UV radiation 11149  
 Erythemally weighted irradiance  $E_{\text{CIE}}$  9650  
 Escapees 533  
*Escherichia coli* (*E. coli*) 6319  
 ESP 9432  
 Essential nutrients 3769  
 EST 2689  
 Esterification 921  
 Estimated breeding value (EBV) 1795  
 Estimated breeding value 436  
 Estimated-no-effect value (ENEV) 11220  
 Estrus 10886  
 et 5173  
 Ethanol fermentation 961  
 Ethanol 988  
 Ethylene propylene rubber (EPR) 11158  
 Etiological agent 9079  
 ETU 7866

- EU 1039, 1584  
 E.U. 5296, 6951  
 Eukarya 5047  
 Euphotic zone 6372, 7296  
 EUR 1039  
 EURT 10403  
 Eutrophic 7006  
 Eutrophication 4819, 10839, 11933  
 EV 8112  
 Evacuated tube collector (ETC) 9449  
 Evacuation 3515  
 Evaporation 11933  
 Evaporation (of water) 5817  
 Evapotranspiration coefficient (TC/ETC) 1098  
 Evapotranspiration (ET) 5619  
 Evapotranspiration 3211, 4673, 7006, 7245, 10997  
 EVD cells 9851  
 Event mean concentration (EMC) 10095  
 Event 10735  
 Evidenced-based design 10261  
 Evolution 8124  
 Ex situ retorting 7457  
 Ex situ treatment technologies 2430  
 Exceedance 8879  
 Excess risk 206  
 Exchange current density ( $i_0$ ) 6720  
 Exciton 7554  
 Exclusion 5315  
 Exclusive economic zone 7383  
 Exemption level 3515  
 Exergy efficiency (for a solar thermochemical process) 9589  
 Exfiltration/infiltration 6865  
 Exothermic 9588  
 Exotic species 6354  
 Exotoxin 5048  
 Expected progeny difference 1723  
 Experimental Breeder Reactor-II 7142  
 Explant 2583  
 Exploitation 6633  
 Exploration 2174, 6633, 7798  
 Exposure assessment 6605, 10735  
 Exposure pathway 3515, 7056  
 Exposure 168, 206, 3022, 3515, 3620, 4905, 6605, 9156, 9650  
 Express bus 5971  
 Express lane 5021  
 Express toll lanes (ETL) 5021  
 Expressway 5021  
 Extended constant power range 10542  
 Extended producer responsibility (EPR) 3443, 11673  
 Extensive green roofs (EGR) 4698, 4730  
 External conditions 7393  
 External conditions (wind turbines) 7425  
 External forcing 2119  
 Externalities 1834, 7296  
 Extinction coefficient 309  
 Extinction 9673  
 Extra high voltage (EHV) 11158  
 Extractant 6646  
 Extraction well 10139  
 Extraterrestrial solar radiation 9673  
 Extruded dielectrics 11158  
 Eye damage 11375  
 °F 2163  
 $f$  5500  
 F<sub>1</sub> bird 639  
 ( $F/A$ ) 5500  
 Fabric filter 8348  
 Facade enclosure envelope 3675  
 FACE 10390  
 Facilitation 10035  
 Facility 2005, 4236  
 Factor Analysis 3099  
 FACTS 10935  
 Facula 9469  
 Facultative organism 5048  
 Fahrenheit temperature (F) 893  
 Failure wind speed 6201  
 Fallout radionuclides 3706  
 False alarm rate 6951  
 FAME 1039  
 fAPAR 7902  
 Faraday efficiency (Coulomb efficiency) 7546  
 Fare collection 1834  
 Far-field effects 9174  
 Farm yield 2720  
 Farming system 9316  
 Farmyard manure 7667  
 Fast approximate model (FAM) 11263  
 Fast neutrons 7086  
 Fast pyrolysis 1518  
 Fate and transport 10139  
 Fatigue 3108

- Fault 4163, 4236, 12079  
Fault-Ride-Through – FRT 12135  
FB 1145  
FBB 4697, 4730  
FBR 9432  
FC 1039, 3872  
FCR (feed conversion ratio) 6354  
FE 1039  
Feasibility study 10139  
Fecal indicator bacteria (FIB) 7667  
Fecal indicator 6319  
Federal Transit Administration 1811  
Feed conversion ratio 8307  
Feedback loop 10062  
Feedback mechanisms 7245  
Feedback 622, 8879  
Feed-in tariff, FiT or FIT 8373  
Feed-in tariff 7936  
Feed-in tariffs 10449  
Feedstock 1026, 10735  
Feedstocks 921  
 $f^*$  4617  
Fe-N-C catalyst 8265  
FEP 7866  
FERC 10935  
Fermentation 988, 1607  
Fermi energy 739  
Ferrous metal 8795  
Fertile fuel 7193  
Fertile 3787, 7086  
Fertility 10886  
Fertilizer efficiency 3769  
Fetch 7425  
Fetus 3620  
FFA 1040  
FFV 1040  
FG 5296  
FG-DVC 5296  
FGT 4957  
Fibrous root system 9062  
Field capacity 1098  
Field winding 11523  
Field-failure 6098  
Field-oriented control 18  
Fill factor of the cell 6566  
Filled insulation 11158  
Filler DNA 2583  
Filter ash 11720  
Finally, CERLA brought into being a new federal agency 2006  
Financial assurance 7056  
Fine particles 11291  
Finite resources 3201  
fIPAR 7902  
FIR (far-infrared) 6951  
Firing temperature 6805  
First flush 8688  
First flush effect 8688  
First-generation cells 9852  
First-service conception rate 10886  
Fischer-Tropsch diesel 6020  
Fischer-Tropsch (FT) process 1607  
Fischer-Tropsch reaction 2222, 3955  
Fish 4380  
Fish sighting 6405  
Fissile fuel 7193  
Fissile 3787, 7086  
Fission 7086, 8589  
Fissionable 7086  
Fissionable fuel 7193  
Fitness constraint 7973  
Fitness 1741, 8307  
Fixed carbon 1488  
Fixed-route bus service 1811  
Fixed-speed system 12135  
Flame-arresting vent 6938  
Flash steam 4163, 4236  
Flash tank 4236  
Flashing light signal assembly 5934  
Flat plate collector (FPC) 9449  
Flat world assumption 6951  
Flavonoids 10735, 11375  
Fleet management 90  
Flexible AC transmission system (FACTS) 9333  
FLL 4697, 4730  
Float V 5881  
Floc 7866  
Flood tide 10613  
Flooded cell 5881  
Flooding 8328  
Flotation 8795  
Flow 3306  
Flow systems 4806  
Flow-sheet design 961

- Flue gas desulfurization (FGD) 8348  
 Fluff 8795  
 Fluidized bed 11851  
 Fluvial system 3706  
 Flux 2016, 8537  
 Fly ash 4236, 11737  
 FMEP 5500  
 $f(nb)$  4617  
 FOC 11523  
 Focus 2424  
 Food additive 10735  
 Food chain 822, 7006  
 Food intoxication 5048, 7384  
 Food safety hazards 9079  
 Food security 10713  
 Food web 822, 7007  
 Foodborne disease 5048, 7384  
 Foodweb 8388  
 Forbush decrease 9796  
 Forecast 2119  
 Forest 1488, 1531  
 Forward genetics 2689, 6426  
 Forward osmosis 2897  
 Fossil fuel 4163  
 Fouling 2897  
 Foundation 7393  
 Founder bird ( $F_0$ ) 639  
 Fourier-transform infrared spectroscopy (FTIR) 5382  
 FOW 1584  
 Fractionation 11202  
 Fragmentation 939  
 Framework 8702  
 Framing 12218  
 FRC 7156  
 FRCC 5909  
 Free ion activity model (FIAM) 10051  
 Free-drifting sediment traps 7268  
 Frequency 1855, 2424  
 Fresh water 11933  
 Friction velocity 594  
 FRT 7777  
 Fructan 10735  
 Fruit biomass 1174  
 $f(sac)$  4617  
 $f_{\text{final}} - 1$  5500  
 $f_{\text{final}}$  5500  
 FT 1040, 1426, 1584  
 Fuel cell durability 8231  
 Fuel cell electric vehicle 11503  
 Fuel cell electrocatalyst 8328  
 Fuel cell performance 8231  
 Fuel cell 3847, 3860, 5084, 6720, 9589  
 Fuel cell stack 9886  
 Fuel cell system (FCS) 8204  
 Fuel cell vehicle 3367  
 Fuel cells (FC) 8204  
 Fuel consumption 11481  
 Fuel flexibility 3886  
 Fuel oriented 1426  
 Fuel 1174, 1488  
 Fuel-cell vehicle (FCV) 10503  
 Full-power systems 12135  
 Fully computational model (FCM) 11263  
 Fumarole 4163, 11633  
 Functional foods 10735  
 Functional genomics 10735  
 Functional traits 8307  
 Functional unit 5893  
 Fundamental period 2424  
 Fungus 10694  
 Fusion of virus and cell membranes 4997  
 Fusion/entry inhibitors 4997  
 FV 7181  
 G2V 7847  
 G6PD 11068  
 GaAs 9432  
 Gabion basket 5645  
 Galactic cosmic rays (GCRs) 9796  
 Gamma radiation 5560, 5573, 8448  
 Gamma spectrometry 3706  
 GAP I 8124  
 GAP II 8124  
 GAP III 8124  
 Gap 6241  
 GAP 8124  
 Gap states 9240  
 Gas diffusion layer (GDL) 8204  
 Gas diffusion layer 8328  
 Gas hydrates 7446  
 Gas to liquids (GTL) 3955  
 Gas turbine 6805  
 Gas-expanded liquids 3933  
 Gas-Heated reforming (GHR) 3955

- Gasification (of coal) 2222  
 Gasification 1231, 1445, 1608, 3997, 5235  
 Gasifier 1445  
 Gasohol 11429  
 Gasoline gallon equivalent (GGE) 5462  
 Gastroenteritis 11985  
 Gastrointestinal 10852  
 GATE 1145  
 Gateway 2583  
 GAVI 8124  
 GCM 2061, 8903  
 GDE 3872  
 GDL 3872, 7866, 7866  
 GE 4070  
 Gearbox 7393  
 Gel cell 5881  
 Gene copy number 10864  
 Gene expression 10735, 10864  
 Gene flow 10713, 10735  
 Gene mapping 10735  
 Gene pool 10735  
 Gene 2689, 6692, 10735  
 Gene pyramiding 2528  
 Gene sequencing 10735  
 Gene silencing 1676, 10735  
 Gene stacking 10345  
 Gene targeting 2583, 2964, 10864  
 Gene transfer 10735  
 General circulation model (GCM) 2098, 6740  
 General purpose lanes (GP) 5021  
 Generalist 149  
 Generation (electricity) 4236  
 Generation interval (*L*) 1795  
 Generation interval 2781  
 Generation 11655  
 Generator 4236, 5084, 6805, 11523  
 Generic model 7007  
 Genetic correlation 415  
 Genetic damage 11375  
 Genetic engineering 1, 347, 2964, 4013, 10735, 10815  
 Genetic improvement 347  
 Genetic map 10735  
 Genetic marker 473  
 Genetic parameters 9359  
 Genetic recombination (of polioviruses) 8124  
 Genetic resource 1741  
 Genetic selection/selective breeding 10886  
 Genetic trends 406  
 Genetic variation 8307  
 Genetically modified (GM) crop, transgenic crop 5428  
 Genetically modified plant 5315  
 Genetically modified/genetically engineered/transgenic organisms 2287  
 Genetically modified/transgenic organisms 10765  
 Genogroup 11985  
 Genome 10735, 10852  
 Genome-wide selection or genomic selection (GS) 2528  
 Genome-wide selection 2781  
 Genomic selection 415  
 Genomics 1741, 10735  
 Genomics-assisted breeding (GAB) 2528  
 Genotoxic 3596  
 Genotype  $\times$  environment interaction 4550  
 Genotype by environment interaction 463  
 Genotype 1676, 8124, 10735  
 Genotypes 436  
 Geochemical modeling 10051  
 Geocomposites 5747  
 Geodesic 581  
 Geoengineering 4104, 10161  
 Geographic information system (GIS) 9705, 10621  
 Geographic information systems (GIS) 3358  
 Geographical routing 11552  
 Geologic carbon sequestration (GCS)=geologic CO<sub>2</sub> storage (GCS) 4119  
 Geologic repository 7142  
 Geological sequestration 2149  
 Geology 4236  
 Geomembrane 5645  
 Geomembranes or flexible membrane liners (FML) 5747  
 Geomembranes 5707  
 Geonets 5748  
 Geopressured 4163  
 Geostrophic approximation 7366  
 Geostrophic balance 12062  
 Geostrophic flow 5856  
 Geostrophic wind 6584  
 Geosynthetic clay liners (GCL) 5707, 5748  
 Geosynthetics 5748  
 Geotextiles 5748  
 Geothermal combined cycle 4236

- Geothermal direct use 4133  
 Geothermal energy 4163, 4191, 4236  
 Geothermal fluid 4236  
 Geothermal heat pump 4133  
 Geothermal heat pumps 4236  
 Geothermal power station 4236  
 Geothermal 4221, 4237  
 Geothermal reservoir engineering 5217  
 Geothermal resource 5217  
 Geothermal steam 4237  
 Geothermal system 4202, 9000  
 Germ cell 10864  
 Germ cells 10815  
 Germ line chimera 639  
 Germplasm 10735  
 Gestation 3620  
 Gettering process 9196  
 Geyser 4163, 4237  
 Geysers, The 4237  
 GFATM 11068  
 GFR 4050  
 GHG 1040, 2061, 9432  
 GHI 9744  
 GIF 4050  
 Gigawatt (GW) 4237  
 Gigawatt-hour (GWh) 4237  
 GIS 1298  
 GIZ 1145  
 GJ 1489, 5296  
 Glacial isostatic adjustment (GIA) 4564  
 Glacier 2455, 2761  
 Glaciers 280  
 Glass 11582  
 Glass-ceramic 11582  
 Gleasonian succession theory 3278  
 Glider 5856  
 Global albedo (A) 9796  
 Global circulation model (GCM) 9796  
 Global data archive 6584  
 Global fallout 8388, 8655  
 Global hemispherical radiation 9673  
 Global Mean Air Surface Temperature (GMAST) 9796  
 Global Navigation Satellite System (GNSS) 3067  
 Global PAR 7902  
 Global positioning system (GPS) 1855, 9705  
 Global spectral irradiance  $E_{\lambda,G}$  9650  
 Global toxification 6179  
 Global warming factor (GWF) 4755  
 Global warming potential (GWP) 7268  
 Global warming 6805, 9486  
 $\beta$ -Glucan 10839  
 Glycanase 10839  
 Glycoalkaloid toxins 10736  
 Glycomacropeptide 10852  
 Glycosylation 8058  
 GMEC 11068  
 GMP 11068  
 GMT 8124  
 GNP 2163  
 GOARN 8124  
 Go-devil 4202  
 GOES 8939  
 Golden rice 10736  
 Governance 1531, 4104, 5835  
 gp120 4997  
 GPEI or GEI 8124  
 GPLN 8124  
 GPS (global positioning system) 6951  
 GPS 10935, 12079  
 GPSR 11552  
 Grain boundaries 9394  
 Grain boundary (GB) 9196  
 Grain development 4550  
 Grain growth 4550  
 Grain quality 4550  
 Graminicide 10345  
 Granite 3501  
 Graphitization 7866  
 Gravity waves 12062  
 Gray (Gy) 5573, 8448, 11027  
 Green and sustainable remediation 10139  
 Green belt 5786  
 Green building 10332  
 Green certificates 8373  
 Green chemistry 4642, 7585  
 Green house gas (GHG) savings 921  
 Green infrastructure 4673, 4698, 4730, 11344  
 Green solvent 10169  
 Greenfield development 5786  
 Greenhouse effect 4237, 6805  
 Greenhouse gas (GHG) 4755  
 Greenhouse gas 168  
 Greenhouse gases (GHG) 11681

- Greenhouse gases (GHGs) 1488, 10503  
Greenhouse 9766  
Grid 4237  
Grid route structure 5972  
Gross erosion 3706  
Gross power 7296  
Ground albedo 9744  
Ground motion 2424  
Ground motions 3233  
Ground source heat pumps 4191  
Grounding line 2761  
Groundwater 2430, 4202, 4414, 4774, 5645, 9000, 11933  
Groundwater treatment technologies 2430  
Groundwater vulnerability to contamination 4806  
Grout 5645  
Growing media 4698, 4730  
Growth management 5786  
GRT 7777  
GS 5173  
GtL 1584  
GTP 652  
Guaranty ecological flow 2788  
Guidelines 206  
Guideway 1855, 6241  
Guild 10062  
Gurley 8715  
GW 2163  
GWP 652, 1040, 1298, 1584, 9432  
Gypsum 6646  
 $H_2$  1040, 1584, 7866  
 $H_2S$  (hydrogen sulfide) 4380  
 $H_2SO_4$  5881  
 $H_3PO_4$  7866  
Haar wavelets 6951  
HAB 9156  
Habitat network 939  
Habitat patch 939  
Habitat 149, 939, 3029  
HACCP: Hazard Analysis Critical Control Point 6605  
Hadley cell 7245  
Hadley circulation 9619  
Hadron 8560  
Hagberg falling number (HFN) 6201  
Half-life 3706, 7194, 8448, 8468, 8589, 10139  
Halophyte 6309  
Haploid 6150, 10736  
Haplotype 2528, 6426  
Hapten 1646  
Hardness (water) 7007  
Harm 10797  
Harmful algae 4819  
Harmful algal bloom 6179  
Harmful algal blooms 2259  
Harvest index (HI) 2661  
Harvest index 1477, 2639, 2720, 10345, 10390  
HAWT 3397  
Hazard characterization 10736  
Hazard identification 6605, 10736  
Hazard 4120, 4866, 6605, 10657, 10736, 10797  
Hazard traits 4846  
Hazardous agent 9156  
Hazardous air pollutants (HAPs) 168  
Hazardous event 6605  
Hazardous materials assessment 4846  
Hazardous materials characterization 4846  
Hazardous 206  
Hazardous substance 2005  
Hazardous waste (HW) 4880  
Hazardous waste 5733, 5748, 9995, 11582  
HBRA 8468  
HCPV 9432  
HDL 9110  
HDPE 5909  
Headway 1834, 1855  
Health effects 6605, 11376  
Health 5332  
Health risk assessment 8688  
Heap leaching 6646, 6665  
Heat content 4909  
Heat exchange reforming (HER) 3955  
Heat exchanger 4163, 4237, 4353  
Heat flow 4163, 4179  
Heat gain from daylight versus electric light 2846  
Heat generation efficiency 8081  
Heat pipe 9449  
Heat pump 4163, 4179, 4353  
Heat rate 6805  
Heat recovery steam generator (HRSG) 2349, 6805  
Heat resistance 10390  
Heat storage cookers 9486  
Heat tolerance 10390  
Heat transfer fluid (HTF) in a CRS 2349  
Heat transfer fluid ("HTF") 7619



- Heating value 6805  
 Heavy metals 11737  
 Heavy rail 5972  
 Heliosphere 9796  
 Heliostat field 2349  
 Heliostat 2349, 6031  
 Helper plasmid 2583  
 Hematopoietic 11027  
 Hemicellulose 6020  
 Hemizygous 10864  
 HEMM 9293  
 Hemolysin 5048  
 Henry's law 9049, 10139  
 Herbaceous biomass 1174  
 Herbaceous fuels 9821  
 Herbaceous 149, 1269  
 Herbicide hypersensitivity 10345  
 Herbicide resistance 10345  
 Herbicide tolerance 4433  
 Herbicide-tolerant transgenic crops 10713  
 Herbivore 149  
 Hereditary effect 11027  
 Hereditary 10736  
 Heritability ( $h^2$ ) 1795  
 Heritability (narrow sense) 415  
 Heritability 2781, 6426, 8307, 9359  
 Hermaphrodite parasite 12018  
 Hermatypic 2489  
 Hermetic seal 6498  
 Heterogeneous 4584  
 Heterojunction 1977  
 Heterojunctions 9394  
 Heteromorphic life histories 9110  
 Heterosis 473  
 Heterostructure 9886  
 Heterotrophic 1476, 6372  
 Heterozygote 10736  
 Heterozygous 10864, 10886  
 HEV 5881, 7847, 8112  
 Hg 2163  
 HHV 1298, 2163, 4957  
 HICC 5909  
 Hidden failure 12079  
 High efficiency 9394  
 High occupancy vehicle (HOV) Lane 1856  
 High pressure fluid filled (pipe type or HPOF) 11158  
 High rate treatment 10095  
 High throughput 6790  
 High voltage (HV) 11159  
 Higher heating value (HHV) 5235  
 High-level radioactive waste (HLW) 8589  
 Highly enriched uranium (HEU) 7201, 11202  
 High-occupancy toll (HOT) lanes 4945  
 High-occupancy vehicle (HOV) lanes 4945  
 High-temperature fuel cells (HTFC) 5134  
 High-temperature proton exchange membrane fuel cell (HT-PEMFC) 3860  
 High-temperature system 4202, 4414, 9000  
 HIV 1145  
 HIV-1 subtypes or clades 4998  
 HIV-2 4998  
 HLNRA 8468  
 HM 7181  
 HMI (human-machine interface/interaction) 3082  
 Holdup 7201  
 Holism 168  
 Holocene 2490, 11613  
 Homing endonuclease 2583  
 HOMO 739, 5173  
 Homogeneous 4584  
 Homogeneous catalysis 3933  
 Homogeneous nucleation 111  
 Homogenization 939  
 Homojunction (heterojunction) 9196  
 Homologous 10736  
 Homologous recombination 2583, 10736, 10852, 10864  
 Homoplasmy 8073  
 Homozygote 10736  
 Homozygous 10864, 10886  
 HOR 3872  
 Horizontal gene transfer 10736  
 Horizontal grate 6449  
 Hormesis 3253  
 Hormone 10736  
 Horticultural residues 1174  
 Host 149, 5347, 10736  
 Hot carrier solar cell 7932  
 Hot dry rock (HDR) 4237  
 HOT Lane 5021  
 Hot sedimentary aquifers 4191  
 Hot Spring 4163  
 Hot-water process 7798  
 HOV 5021

- HPS 4957  
HRSG 2163  
HRT 1145  
 $h_1$  5500  
 $h_2$  5500  
 $h_3$  5500  
 $h_{3a}$  5500  
 $h_5$  5500  
 $h_6$  5500  
 $h_e$  5500  
 $h_i$  5500  
HT-PEFC 3872  
HT-PEM 7866  
H-type VAWT 3397  
Hub height 6584  
Human Factors 3099  
Human health risk assessment 4880  
Human immunodeficiency virus (HIV) 4997, 11129  
Human-centered design 3082  
Humidified fuel 2934  
Humidity 893  
Hurricane 5071  
HVAC (heating, ventilation, and air-conditioning system) 5332  
HVAC 10333  
HVO 1040  
Hyb 1040  
Hybrid (asymmetric) capacitor 3426  
Hybrid brake system 8848  
Hybrid electric vehicle (HEV) 5084, 10503  
Hybrid electric vehicle (HEV) 3860  
Hybrid electric vehicle 3367, 11503  
Hybrid energy storage 5103  
Hybrid geothermal cycles 4237  
Hybrid geothermal power stations 4237  
Hybrid 3108, 5103, 10736, 10895  
Hybrid solar cookers 9486  
Hybrid solar system 7641  
Hybrid system 2349  
Hybrid vehicle 1856, 10482  
Hybrid vehicles 4945  
Hybrid ventilation 6865, 10333  
Hybrid-electric vehicle (HEV) 3471  
Hybridization 10736  
Hydraulic conductivity 4806, 5712  
Hydraulic head 5712  
Hydraulic residence time 7007  
Hydrocarbon ionomers 6538  
Hydrocarbons 10139, 10482  
Hydrodynamic dispersion 10139  
Hydrodynamics 10139  
Hydrogen oxidation reaction (HOR) 7757, 8328  
Hydrogen 7881  
Hydrogen production 7881  
Hydrogen separation 5135  
Hydrogeology 10139  
Hydrograph 9049  
Hydrographic sections 5856  
Hydrological connectivity 7667  
Hydrological cycle 8688  
Hydrology 4179  
Hydrolysis 9049, 10139  
Hydrophilic/hydrophobic phase separation 6538  
Hydrophilicity 12293  
Hydrophobic 10139  
Hydrophobic pocket factors 8124  
Hydrophobic pocket 8124  
Hydrophobicity 11961, 12293  
Hydrostatic approximation 7366  
Hydrostatic balance 12062  
Hydrothermal carbonization 1067  
Hydrothermal eruption 4414  
Hydrothermal 4163  
Hydrothermal resource 4237  
Hydrotreating 1608  
Hygroscopicity 111  
HyMeX 5071  
Hyperion 8939  
Hypersensitivity reaction 12018  
Hyperspectral 8919  
Hypocenter 4202, 4415  
Hypolimnion 7007  
Hyporheic flow 5673  
Hypoxia 6179  
Hypsicity index 4617  
 $I$  4617  
 $I_a$  5173  
IADB 1145  
IAM 6031  
IAQ (indoor air quality) 5332  
IC 1145  
ic 5173  
ICE 5909  
Ice sheet 280, 2761

- Ice sheets 2455  
 Ice shelf 2761  
 Iceberg ploughmark 6405  
 Icefield 2761  
 ICF 7156  
 Icosahedral 11985  
 ICRH or ICH 7156  
 ICS 1298  
 ICSI 10815  
 IC<sub>x</sub> 11220  
 i.d. 8124  
 Ideal PAR energy sensor 7902  
 Ideal PAR quantum sensor 7902  
 Identity preservation 10736  
 Ideotype 1477  
 IEA 1040, 1298, 2163  
 IEC 61400–1 6584  
 IEQ (indoor environmental quality) 5332  
 IFAD 1145  
 IFMIF 7156  
 IGCC 1426, 2163  
 Igneous rocks 3501  
 III-V Solar cells 7932  
 Illegitimate recombination 2584  
 Illuminance 2804  
 Illuminance (lux/lumen/candela) 2847  
 ILUC 1488  
 i.m. 8124  
 IMEP<sub>g</sub> 5500  
 IMEP<sub>n</sub> 5500  
 Immission 5235  
 Immobilized catalyst 9562  
 Immortal stranding 3596  
 Immunoassay 10736  
 Immunodeficient 8124  
 Immunogen 10736  
 Immunogenicity 6291, 8124  
 Immunoglobulin (Ig) 8058  
 Immunostimulants 6354  
 Impact ionization 9412  
 Impact on beneficial insects 10713  
 Impact 5548  
 Implantable defibrillator 6498  
 Impurity poisoning 3887  
 IMTA 6309, 9110  
*In planta* transformation 2584  
 i.n. 8124  
 In situ conversion 7798  
 In situ 310  
 In situ retorting 7457  
 In situ stress 3501  
 In situ treatment technologies 2430  
 In vitro 10736, 10852, 11027  
 In vivo 10736, 11027  
 Inattention 3108  
 Inbred 1676, 10736  
 Inbreeding coefficient (*F*) 1795  
 Inbreeding coefficients 436  
 Incidence angle 9673  
 Incidence 4998, 11129  
 Incident angle modifier (IAM) 9449  
 Incineration 4880, 11720  
 Incinerator 9979  
 Inconel 7194  
 Independent system operator 8980  
 Index of refraction (real), *n* 8953  
 Index selection 8307  
 Indicator species 3278  
 Indicator trait 2781  
 Indirect coal liquefaction (ICL) 2222  
 Indirect effects (or impacts) 10797  
 Indirect gain 7640  
 Indirect potable reuse 11873  
 Indirect retorting 7457  
 Indoor air quality (IAQ) 6865  
 Indoor environmental quality (IEQ) 10333  
 Indoor solar cooking 9486  
 Induced subsidence 2788  
 Induced traffic/demand 4929  
 Inducer 10736  
 Induction machine (IM) 18  
 Industrial enzymes 8024  
 Industrial Materials 11699  
 Industrial solid wastes (ISW) 5707  
 Industrial waste 10000  
 Infant 3620  
 Infection 5358, 6605, 8124  
 Infectious agent 5347  
 Infectious disease 5358, 6605  
 Infinitesimal genetic model 415, 436  
 Infinitesimal Model 473  
 Information system (IS) 6692  
 Infrared spectroscopy 5382  
 Infrasound 11633

- Inherent optical properties (IOP) 8953  
 Initial condition ensemble 2098  
 Initiation 3596  
 Injection aquifer 4202  
 Injection 4237  
 Injection (reinjection) 4415  
 Injection (syn. reinjection) 4202  
 Injection well 10139  
 Injection zone 9000  
 Inline system 10095  
 Innovation 12218  
 Inorganic 10139  
 In-place 330  
 INS 6951  
 Insect orders 4013  
 Insect resistance crops 10713  
 Insect resistance 4433  
 Inserted DNA 10736  
 Insertion compound 739  
 Insolation 9619  
 Instabilities (or unstable modes) 12062  
 Installed capacity 4474  
 Institutional controls 7056  
 Institutions 12218  
 Instrumented vehicle 3082  
 Integrase inhibitors 4998  
 Integrase 4998  
 Integrated assessment model (IAM) 5398  
 Integrated assessment 1531  
 Integrated breeding platform (IBP) 6692  
 Integrated coastal zone management (ICZM) 1959  
 Integrated Coastal Zone Management (ICZM) 511, 9174  
 Integrated earth system model (iESM) 5398  
 Integrated multi-trophic aquaculture (IMTA) 543, 1927, 10317  
 Integrated pest management (IPM) 5428  
 Integrated pest management 149  
 Integrated project delivery (IPD) 10299  
 Integrated waste management 11682  
 Integration 2584  
 Intelligent materials pooling (IMP) 9026  
 Intelligent transport system (ITS) 1834  
 Intelligent transportation system (ITS) 1856, 11455  
 Intelligent transportation systems 1818  
 Intensity 2424  
 Intensive green roofs (IGR) 4698, 4730  
 Inter tropical convergence zone 7245, 9619  
 Interaction coefficient 8537  
 Intercalation compound (host material, insertion compound) 709  
 Intercept factor 7619  
 Intercepted photosynthetic active radiation (IPAR) 2661  
 Interception loss 5817  
 Intercrop 1098  
 Intercropping 149  
 Interface 9129  
 Interfacial impedance 6037  
 Interfacial tension 10139  
 Interferogram 11633  
 Interferometric synthetic aperture radar (InSAR) 8939  
 Interim remedial action 10139  
 Interior permanent magnet (IPM) 18  
 Interlining 1856  
 Intermediate host 5358  
 Intermediate pyrolysis 1518  
 Internal combustion engine (ICE) 3860, 5084  
 Internal combustion engine vehicle (ICEV) 10503  
 Internal emitter 11027  
 Internal resistance 6720  
 Internal variability 2119  
 Interoperability 10192  
 Intertropical convergence zone (ITCZ) 6741  
 Interurban 5972  
 Intervention 3515  
 Introgressed 10736  
 Introgression library lines (ILLs) 6426  
 Introgression 1676, 10797  
 Inulins 10736  
 Invasibility 5548  
 Invasion ecology 5548  
 Invasional meltdown 5548  
 Invasive species 5548, 6179  
 Inventory 3706  
 Invertase activity 10737  
 Inverted T-DNA repeat 10671  
 Inverter 5084  
 Inverters 8373  
 Invisible present 6216  
 Ion exchange capacity 6538  
 Ion exchange 4584  
 Ionic channels 6539

- Ionic liquid electrolyte 6037  
 Ionic liquids 10169  
 Ionic resistance 7866  
 Ionic stress 5315  
 Ionization 3022, 4905  
 Ionizing radiation 5560, 8448  
 Ionomer 8328  
 Ionomers 6538  
 Ionosphere 4564  
 i.p. 8124  
 IPAR 7902  
 IPCC 2061  
 IPCE 6566  
 iPS cells 10815  
 IPV 8124  
 IR camera 6449  
 IRES 8124  
 Irradiance (downward planar),  $E_d(\lambda)$  8953  
 Irradiance 8919, 9705, 11149  
 Irradiance reflectance,  $R(\lambda)$  8953  
 Irrigation 8688  
 Irrigation return flows 5619  
 IRS 11068  
 isc 5173  
 ISG 11523  
 ISO 10935  
 Isoflavones 10737  
 Isolated gain 7641  
 Isomorphic life histories 9110  
 Isopycnal coordinate 7366  
 Iseismic map 2424  
 Isotope 3022, 4905, 5634, 8468, 10997  
 Isotopes 7086, 7194  
 Isotopic effects 10997  
 Isotropic effect 11027  
 i.t. 8124  
 ITD 8124  
 ITER 7156  
 Iterative closest point (ICP) algorithm 10590  
 ITN 11068  
 ITR 11552  
 ITS (intelligent transport systems) 3082  
 ITS 90  
 iVDPV 8124  
 IVF 10815  
 Jacket 11159  
 Jahn–Teller effect 709  
 JCO 8468  
 Jet in coflow 10975  
 Jet in crossflow 10975  
 Jet 10975  
 Jet stream 9796  
 Joint development 10923  
 Joint network 3501  
 Joint 11159  
 Joule (J) 4163, 4353  
 $J_{th}$  11202  
 Jurassic 2174  
 Justification (for intervention) 3515  
 Karst 2788, 5645, 6633  
 Karyoplast 6150  
 KBR 4564  
 Kernel mass of waste 4617  
 Kernel reaction mass efficiency 4617  
 Kerogen 7457  
 Keystone species 3300  
 KfW 1145  
 kg 7181  
 Kilowatt (kW) 4237  
 Kilowatt-hour (kWh) 4237  
 Kinematic viscosity 2048, 10955, 10962  
 km 1040  
 Knock in 10737  
 Knock out 10737  
 Knockdown 2964, 10852, 10895  
 Knockin 10852, 10886, 10895  
 Knockout 10852, 10864, 10886, 10895  
 Knockout/knockin 2964  
 Known geothermal resource area 4237  
 $K_{ow}$  12293  
 $k_x$  5173  
 KVA 5881  
 kW 7181, 7866  
 kWh 3955, 5296, 7181  
 kW<sub>h</sub> 5296  
 kWh(e) 7181  
 L 12202  
 LA 5173  
 Lahar 8940, 11613, 11633  
 LAI 3211  
 Lake/river ice 2761  
 Lambda 1299  
 Laminar flow 2031, 2048, 10962  
 Laminated dielectrics 11159

- Land consumption 5786  
 Land cover 5786  
 Land degradation 2929  
 Land disposal 5707  
 Land surface processes 3211  
 Land use (land-use emissions) 5399  
 Land use pattern 5786  
 Land use plan 5786  
 Land use planning 5786  
 Land use 1532, 5786, 5836  
 Land-based and offshore mariculture systems 6309  
 Landfill bioreactor 5720  
 Landfill cap 5707  
 Landfill gas (LFG) 5707  
 Landfill gas 1089, 1618  
 Landfill 5720, 5733, 9979  
 Landfilling 11737  
 Landscape assessment 10361  
 Landscape capacity 10361  
 Landscape character 10361  
 Landscape connectivity 5772  
 Landscape design 10361  
 Landscape dynamics 5772  
 Landscape ecology 939, 5772, 5817  
 Landscape fragmentation 5772  
 Landscape function 5772  
 Landscape management residues 1174, 1488  
 Landscape pattern 5772  
 Landscape perception and preference 10361  
 Landscape planning 5818, 5836  
 Landscape 5772, 5817, 10361, 12218  
 Landscape sensitivity 10361  
 Landscape structure, function, and pattern structure 5818  
 Landscape structure 5772  
 Landscape sustainability 5772  
 Landscape value 10361  
 Landscape water balance 5818  
 Langley plot 9705  
 Lanthanides 8598  
 Lapse rate 622  
 Large dams 2788  
 Large scale 1426  
 Laschamp event 9796  
 Laser fluorosensor 7491  
 Laser range finder (LIDAR) 11455  
 Laser scanner 65, 3067  
 Last glacial maximum (LGM) 2098  
 Latent heat storage 10551  
 Latent tuberculosis infection (LTBI) 11129  
 Lateral flow assay 1646  
 Lateral roots 9062  
 Lateral tire forces 3052, 11187  
 Laterite 1909  
 Lava 4163  
 LC<sub>50</sub> 3265  
 LCA 1040, 1584, 5909, 9432, 9934, 11759  
 LCI 1040, 1584, 5909, 9432, 9934  
 LCIA 1040, 1584  
 LCM (lost-circulation material) 4380  
 LD<sub>50</sub> 5573, 11220  
 LDL 9110  
 Leachate 5707, 5733, 5748  
 Leachate recirculation 5720  
 Leaching 4237, 7667, 10139, 11720, 11737  
 Leaching requirements 5619  
 Lead 206  
 Lead time 2098  
 Leadership in Energy and Environmental Design (LEED) 4698, 4730  
 Leaf area index (LAI) 2661  
 Lean 5501  
 Lean thinking 10299  
 LEED™, BREEAM™, Greenstar™, CASBEE™ 10261  
 Legacy 3326  
 Legume 149  
 Lentic 5673  
 Lentiviral vector 10895  
 Lentiviruses 10864  
 Level of service (LOS) 1856  
 Levelized electricity cost (LEC) 9766  
 Levelized power cost 4340  
 LFG 5909  
 LFGTE 5909  
 LFR 4050  
 LHCD or LH 7156  
 LHV 1299, 4957  
 Lib files 6584  
 Lidar 280, 310, 6584  
 Life cycle analysis (LCA) 7932, 10140  
 Life cycle analysis 921  
 Life cycle assessment (LCA) 3450, 5893  
 Life cycle of parasite 12018

- Life cycle 9934  
Life history of parasite 12018  
LiFePO<sub>4</sub> 7527  
Lifetime 606, 7694  
Lift 3397  
Light distillate 2222, 3955  
Light distribution curves (LDC) 2847  
Light nonaqueous phase liquid (LNAPL) 10140  
Light rail 806, 5972  
Light rail transit (LRT) 1811, 1856, 5935  
Light rail transit 5950  
Light rail vehicle (LRV) 1856  
Light rail vehicles (LRVs) 5935  
Light saturation constant 347  
Lignin 6020, 6896  
Lignite 8348  
Lignocellulose 1269, 11429  
Lignocellulosic ethanol 1608  
Lignocellulosic material 961  
Li-ion battery 9293  
Likelihood 4120  
Limnology 5673  
Line capacity 1856  
Lineages 8124  
Linear energy transfer (LET) 5573  
Linear energy transfer 11027  
Lined ditch 5645  
Lining 5748  
Linkage disequilibrium (LD) 2528, 6426  
Linkage disequilibrium 415, 473  
Linkage drag 6426  
Linkage 10737  
Linke turbidity factor 10621  
Linked trip 1856  
Lipid peroxidation 3656  
Lipophilicity 12293  
Liquefaction 988  
Liquefied natural gas (LNG) 3956  
Liquid density 10140  
Liquid viscosity 10140  
Liquid-dominated system 4202, 4415  
Lithium-ion battery (LIB) 7527  
Lithium-ion capacitor 3426  
Lithosphere 6633  
Livestock animal 8073  
Livestock 10886  
Living building 10333  
Living modified organism (LMO) 2287  
Living modified organism 10766  
Living systems thinking 8856  
LN 6449  
Load (electric) 4237  
Load factor or coefficient of utilization 1856  
Load (internal/primary) 7007  
Load (secondary) 7007  
Local flow system 4806  
Local minimum 11552  
Locally preferred alternative 1856  
Locational patterns 8856  
Locus (Plural loci) 10737  
Locus 1676, 7217  
Lodging 6201  
Lodging-proof ideotype 6201  
LOEC 3265  
Logarithm of the odds ratio (LOD) 6426  
Log-normal distribution 11202  
Longitudinal IAM 6031  
Longitudinal 6031  
Longitudinal tire forces 3052, 11187  
Long-term effect 6633  
Longwave 9705  
Low impact development (LID) 4731  
\*LA 5173  
Low-emission and energy-efficient vehicles 4945  
Low-enriched uranium (LEU) 11202  
Lower explosive limit 10140  
Lower heating value(LHV) 4755  
Lowest observed adverse effect level (LOAEL) 3620  
Lowest-observed-effect level (LOEL) 11220  
Low-Exergy System 4133  
Low-frequency sound 12275  
Low-impact development (LID) 3450, 4698  
Low-level jet 7245  
Low-level radioactive waste (LLW) 8589  
Low-NO<sub>x</sub> burners (LNB) 8348  
Low-temperature PEM fuel cell (LT-PEMFC) 3860  
LPG 1299  
LPS 4957  
L-pyr 5173  
LRD 4957  
LRT 1890  
LUC 1488  
LULUCF 1489  
Luminance 2804

- Luminosity 9619  
 Luminous efficacy 9705  
 LUMO 739, 5173  
 Lysogenic conversion 5048  
 $\dot{m}_a$  5500  
 $\dot{m}_f$  5500  
 $M$  4617, 12202  
 $m$  5500  
 Maar 11613  
 Macerals 2174  
 Macroalgae 9110  
 Macrocycle 8265  
 Macronutrient 1676, 10737  
 Macronutrients 3769  
 Macrophyte 6646  
 Macrophytes 7007, 11891  
 MACT (Maximum Achievable Control Technology) 298  
 Madden–Julian oscillation (MJO) 6741  
 Mafic 11202  
 Maglev (magnetic levitation) 6241  
 Magma chamber 5217  
 Magma 4163, 4179, 4237  
 Magnetic Induction 6241  
 Magnetic shear 7156  
 Magnets, electromagnetic 6241  
 Magnets, permanent 6241  
 Magnets, superconducting 6241  
 Magnitude 2424  
 Main shock 2424  
 Major disease 8124  
 Major drainage flow paths 10095  
 Major ions and nutrients 7328  
 Major source 298  
 Makeup well 9000  
 Make-up well cost 4340  
 Make-up well 4202  
 Malaria 498, 11068  
 Malnutrition 1676  
 Managed lanes 5021  
 Manned submersible 3151  
 Manning equation 9049  
 Mantle 4179  
 MAPREC 8124  
 Marginal cost 1856  
 Marginal value 3313  
 Mariculture 511, 9110  
 Marine and hydrokinetic energy 6345  
 Marine aquaculture 7384  
 Marine fisheries enhancement 6386  
 Marine 6386  
 Marine protected areas 6354  
 Marker assisted selection or marker aided selection (MAS) 10737  
 Marker 2689, 10737  
 Marker-assisted selection (MAS) 1476, 2528  
 Marker-assisted selection 473, 10864  
 Markers 389  
 Market potential 1532  
 Martensitic or ferritic steels 7194  
 Mascons 4564  
 Masking 12275  
 Mass Balance Model 10657  
 Mass balance 2761  
 Mass boundary layer 595  
 Mass impregnated non-draining Cable (MIND) 11159  
 Mass intensity 4617  
 Mass selection 8308  
 Mass spectrometry 10737  
 Mass transfer coefficient 2016  
 Mass transfer 2016, 4774, 6720  
 Mass transfer rate 9129  
 Mass transport 4094  
 Mass-burn incineration 11787  
 Material flow analysis (MFA) 3450, 11708  
 Material life cycle 4847  
 Material recovery facility 11655  
 Material recovery parameter 4617  
 Materials bank 9026  
 Materials security 9026  
 Materials selection 4847  
 Matrix flow 7667  
 Matrix 6720  
 Maximum electrical stress 11159  
 Maximum load section (MLS) 1856  
 MBT 5296  
 MCFC 3872  
 MCL 6951  
 mc-Si 9432  
 MDCV 11159  
 MDG 1299  
 Me<sub>2</sub>bpy 5173  
 Me<sub>2</sub>phen 5173



- MEA 372, 7694  
Mean free path 5634  
Mean or average electrical stress 11159  
Mean residence time (MRT) 846  
Mean residence time 161  
Mean sea level 2455  
Measures 3108  
Mechanical coupling 3367  
Mechanism of action 3620  
MED 9758  
Medicinal plants 6519  
Medium voltage (MV) 11159  
Megacity 8879  
Megagram (Mg) 1269  
Meganuclease 10895  
Megawatt (MW) 4237  
Megawatt-hour (MWh) 4237  
Meiosis 6150  
Membrane bioreactor (MBR) 11873, 11961  
Membrane distillation 2897  
Membrane electrode assembly (MEA) 7757, 8174, 8204, 8328  
Membrane/PEM 8231  
Memory effect 672  
Mendelian sampling 2781  
MeOH 1040, 1584  
MEP 5500  
Meridional overturning circulation (MOC) 7366  
Meridional overturning circulation 5856  
Meridional 5856  
Mesohumic 7007  
Meson 8560  
Mesophile 6646  
Mesoscale convective system (MCS) 5071  
Mesoscale model 6584  
Mesoscale 8903, 11263  
Mesoscopic 6566  
Messenger RNA (mRNA) 10737  
MET 4070  
Metabolic engineering 6519  
Metabolic heat and water 8308  
Metabolism 10737  
Metabolite 10737  
Metabolites 11911  
Metabolome 1184  
Metabolomics 1184, 10737  
Metal waste 7142  
Metallic shield 11159  
Metalloid 7328  
Metal-support cells 9852  
Metanalysis 6426  
Metaphase II (MII) 6150  
Metaphase 7217  
Metapopulation 939, 5428, 5772  
Metastability 9240  
Methanation 1661  
Methanogenesis 6647  
Metrics 8879  
Metro 806  
Metro rail 1890  
Metropolitan planning organization (MPO) 1856  
MF 1584  
MHD 7156  
MICC 6449  
Microaerophilic 10140  
Microarray 8124, 10737  
Microbial pollution 8758  
micro-CHP 9904  
Microclimate 149  
Microcrystalline 9240  
Microemulsion 10169  
Microgrid 5084  
Micronutrient 1676, 10737  
Micronutrients and trace elements 7328  
Micronutrients 3769  
Microorganism 497  
Micropollutant 11911, 11961  
Microsatellite 7973  
Microscale model 6584  
Microscopic cross section 3787  
Microstructure 9240  
Microwave sensor 7491  
Microwaves 4642  
Middle distillate 2222, 3956  
Mie scattering 9705  
mill 7181  
Mineral carbonation 1909  
Mineral 1676  
Mineralization 9049, 9562  
Mini-chromosome 10737  
Minichromosome 2584  
Minimal cassette 2584  
Minimal erythral dose (MED) 11376  
Minimum electrical stress 11159

- Mining life cycle 6647  
 Minor actinides 7142  
 Minor disease 8124  
 Minor drainage flow paths 10095  
 Minority carrier diffusion length  $L$  9197  
 Minority carrier lifetime  $\tau$  and diffusion length  $L$  9196  
 Mirror, mirror panel (PTC) 7619  
 MISC 1584  
 Misch metal 6938  
 Miscibility gap 7527  
 MIT 2163  
 Mitigation 1627, 2424  
 Mitigation (with respect to climate change) 4674  
 Mitochondria 11376  
 Mixed ionic electronic conductor 3887  
 Mixed layer 4909  
 Mixed mode or hybrid HVAC 10261  
 Mixed model equations 436, 473  
 Mixed models 415  
 Mixed waste (MW) 5748  
 Mixed-mode or Hybrid HVAC 3675  
 Mixed-mode ventilation 6865  
 Mixer-settler 7142  
 Mixing ratio 11311  
 Mixture calorific value 5462  
 MJ 1040, 1584  
 MLCT 5173  
 MMCT 5173  
 mmf 11523  
 MMV 11068  
 mn 1040  
 MNVT 8124  
 Mo 1040  
 Mobile source 298  
 Mobile sources 206, 8879  
 Mobilization 7667  
 Modal split 1811, 1856  
 Mode 5972  
 Model 1959, 9000, 9316  
 Modeling framework 1928  
 Modeling 10095  
 Models 1532  
 Moderator 7086  
 Modern biotechnology 2287, 10766  
 MODIS 8939, 9696  
 Module (PTC) 7619  
 Moist static energy (MSE) 6741  
 Molecular breeding (MB) 6693  
 Molecular breeding platform (MBP) 6693  
 Molecular breeding value 1723  
 Molecular farming (also pharming) 8059  
 Molecular flow 5634  
 Molecular growth 6975  
 Molecular marker 1476  
 Molecular markers 2720  
 Molecular pharming 8073  
 Molecular weight cutoff (MWCO) of a membrane (absolute MWCO) 10530  
 Monitoring 7056  
 Monoaromatic hydrocarbons (MAHs) 10140  
 Monoclimax 3278  
 Monoclonal antibody 8059  
 Monocotyledonous plants 1477  
 Monogenetic field 11613  
 Monomer 11376  
 Monomitic 7007  
 Monopolar cell 5881  
 Monorail 1856  
 mono-Si 9432  
 Monsoon 7245  
 Monte Carlo 7007  
 Monte Carlo code 9705  
 Montreal protocol 10130  
 mOPV 8124  
 Morbidity 206  
 Morgan 473  
 Morphogenesis 11376  
 Morphometric 7007  
 Mortality 168, 206, 11130  
 Mosaicism 10815  
 Motion planning 2464  
 Motivation 10865  
 Motor 11523  
 MOX 7181, 11202  
 Mpa 2163  
 MRF 5296  
 mRNA 10737  
 MRO 5909  
 MSDS 5881  
 MSF 9758  
 MSR 4050  
 $m_1$  5500  
 $m_2$  5500

- $m_3$  5500  
 $m_4$  5500  
 $m_6$  5500  
 $m_a$  5500  
 $M_b$  5500  
 $m_f$  5500  
 $M_R$  12202  
 $m_r$  5500  
 $m_{\text{total}}$  5500  
 MSW incineration 11838  
 MSW 3997, 5296, 5909, 8097, 10577, 11759  
 MSWI 4866  
 MSWU 11202  
 MTF 7156  
 Muffler 4237  
 Multicrystalline silicon 9197  
 Multidestination transit route networks 5972  
 Multieffect distillation 2897  
 Multifocal vision system 46  
 Multigene transfer 2584  
 Multigenic 10737  
 Multijunction 9412  
 Multijunction solar cell 7932  
 Multi-laser sensing system 3171  
 Multimodal 1819  
 Multi-model ensemble (MME) 2098  
 Multiphase catalysis 3933  
 Multiplication factor 7086  
 Multipollutant monitoring 168  
 Multipurpose cookers 9486  
 Multi-scale analysis 3326  
 Multistage flash distillation 2897  
 Multi-trophic relationships 149  
 Multivoltage solar-electric cooker 9487  
 Municipal solid waste (MSW) 4755, 5235, 5748, 8795, 9995, 11787, 11838  
 Municipal solid waste 10000, 10014  
 Municipal solid wastes (MSWs) 5707  
 Mutagenesis 4013  
 Mutant 10737  
 Mutation Breeding 10738  
 Mutation 2689, 10738, 10886  
 MW 2163, 5296  
 MWD/MTU (mega watt days of energy produced per metric ton of uranium contained) 6688  
 MWh 2163  
 MWh(e) 7181  
 Mycobacterium tuberculosis 11130  
 Mycorrhizae 149  
 Mycotoxin 1098  
 N dilution 2661  
 $N$  4617, 5500  
 $n$  7181  
 Nacelle 7393  
 Nachhaltigkeit 6633  
 Nanocarbon 6769  
 Nanocrystalline 9240  
 Nanofiltration (NF) membrane 10530  
 Nanohybrid capacitor 3427  
 Nanoparticle 1646  
 Nanotechnology 6790  
 Nanowire 9293  
 Narrow genetic base 2528  
 National Ambient Air Quality Standards 206  
 National REAP in the EU 8373  
 National Transit Database (NTD) 1856  
 Natural attenuation (NA) 10403  
 Natural attenuation 5748  
 Natural capital 168, 3314  
 Natural enemy 10062  
 Natural gas liquids (NGL) 3956  
 Natural monopoly 10449  
 Natural organic matter (NOM) 10051  
 Natural resource management 3342  
 Natural ventilation 6865, 10333  
 Naturalistic driving behavior 3082  
 NBI 7156  
 NCCs 8125  
 Neap tide 10613  
 Near isogenic lines (NILs) 6426  
 Necking 6201  
 Negative electrode 6122  
 Negative feedback 2510  
 Neglected tropical diseases 11997  
 Neighborhood scale 11263  
 NEON 3201  
 Neonate 3620  
 NERC 5909, 10935, 12079  
 Nested systems of governance 564  
 Net erosion 3706  
 Net power 7296  
 Net primary productivity (NPP) 846  
 NETL 2163  
 Network analysis 3306

- Network 9469  
Network system 7778  
Net-zero buildings 10333  
Neurostimulation or neuromodulation 6498  
Neurovirulence attenuation sites 8124  
Neurovirulence 8124  
Neutralizing antigenic sites 8124  
Neutron capture cross section 7194  
Neutron 8537  
New urbanism 1890  
Newton's law of gravitation 4564  
Next-generation sequencing (NGS) technologies 2528  
NG 7866  
NGO 1145  
NGOs 8125  
Ni 1040  
Niche overlap 10062  
Niche 8201  
Nickel cadmium fiber plate 6938  
NID 8124  
NIDs 8125  
Night cooling 6865  
Night ventilation 3675  
NIL 2689  
NIMBY 12218  
NIMBYism 6354  
Ni-MH 6938  
n-i-p solar cell 9241  
NIR 65, 6951  
NIRWARN 6951  
Nitric oxide (NO) 8348  
Nitrification 11933, 11946  
Nitrogen absorption efficiency (NAE) 2661  
Nitrogen conversion efficiency (NCE) 2661  
Nitrogen dioxide (NO<sub>2</sub>) 8348  
Nitrogen fixation 10738  
Nitrogen nutrition index (NNI) 2661  
Nitrogen oxides 206  
Nitrogen use efficiency (NUE) 2661  
Nitrous oxide (N<sub>2</sub>O) 4755  
NMHC 1299  
NMVOC 1299, 1584  
NNMC 8265  
NO 5296  
No tillage agriculture 4433  
NO<sub>2</sub> 244  
NOAEL 3253  
Noble metals 7142  
No-build scenario 1856  
NOEC 3265  
Noise 12275  
Nonaqueous phase liquid (NAPL) 10140  
Nonaqueous phase liquids (NAPLs) 2430  
Noncondensable gases (NCG) 4237  
Non-condensable gas 4415  
Nondestructive assay 7201  
Non-ferrous metal 8795  
Non-flame incineration 6976  
Nonnative species (synonyms: alien, exotic, foreign, nonindigenous) 5548  
Nonpecuniary benefit 4433  
Nonpoint source pollution 7667, 8688  
Nonpoint SOURCE 9049  
Non-potable water 2319  
Nonpotable water 8688  
Nonstructural genes 8125  
Non-traction load 5103  
Non-transferred arc plasma torch 8097  
Nonvolatile dissolved organic carbon (NVDOC) 5748  
Nonwoven separators 8715  
No-observed-effect level (NOEL) 11220  
NORM 8388, 8468  
Normal hydrogen electrode (NHE) 7731  
North Atlantic deep water 5856  
North Atlantic Oscillation (NAO) 9796  
Northern annular mode (NAM) 9796  
North/south 11068  
Nosocomial 5048  
Novel mechanisms for insect resistance 10713  
Novel trait 10797  
NO<sub>x</sub> limited 11311  
NO<sub>x</sub> 2163, 5296, 11311  
NO<sub>x</sub> 8348  
NPCC 5909  
NPEV 8125  
nr 5174  
NRC 2163  
NSL 8124  
 $n_R$  5500  
Nuclear fission 8448  
Nuclear fuel clad or cladding 7194  
Nuclear fuel cycle 7056

- Nuclear magnetic resonance (NMR) 6068  
 Nuclear material (NM) 7201  
 Nucleic acid 10738  
 Nucleotides 10738  
 Nucleus 4998, 10738  
 Nuclide 3023, 4905, 5560, 7086, 8560  
 Nudging 8903  
 NUR 11552  
 Nutraceutical 10738  
 Nutrient certificates 9026  
 Nutrient 6372  
 Nutritionally improved 10738  
 O<sub>2</sub> 7866  
 O<sub>3</sub> 244  
 O-Bahn 1856  
 Objective analysis 4909  
 OBR 1040  
 Observer or estimator 3052, 11187  
 OCC 5909  
 Ocean acidification 7229  
 Ocean color 8919  
 Ocean conveyor belt 5856  
 Ocean current 8655  
 Ocean fertilization 7267  
 Ocean gyre 7366, 8655  
 Ocean observatory 7282  
 Ocean ranching 10317  
 Ocean thermal energy conversion 6345  
 Ocean thermal resource 7296  
 (Oceanic) Mesoscale eddy 7366  
 OCP 2934  
 Octanol-water partitioning coefficient 11912  
 OCV 372  
 ODM 1145  
 OE 1040  
 OECD 1040, 2163  
 Off-line stations 7778  
 Off-line system 10095  
 Off-quadrant 5935  
 Off-road vehicle 5084  
 Offset 9026  
 Offshore aquaculture 511  
 Offshore co-management 511  
 Offshore 4474  
 Offshore wind developments 4474  
 Offshore wind farms 512  
 Offshore wind turbine 7394  
 Off-site impacts 3706  
 OH 7156  
 OHI 6404  
 Ohmic loss ( $\eta_{IR}$ ) 6720  
 Oil mining 7798  
 Oil sands 7446  
 Oil shale 7446, 7457  
 Oilseeds 4551  
 Oleaginous microorganisms 11429  
 Oligohumic 7007  
 Oligomerization 4013  
 Oligonucleotide 8125  
 Oligotrophic 6354, 7007  
 Olivine 1909, 7527  
 O&M 4957  
 OM 7847  
 Omics 1184  
 Oncogenic process 3596  
 One health 2259  
 One-electron reduction 6038  
 Online estimation 11946  
 ONP 5909  
 Onshore wind developments 4474  
 On-site impacts 3706  
 Ontology 10192  
 Oocyte 11027  
 Oogenesis 11027  
 Oomycetes 2559  
 Open circuit voltage ( $E_{OCV}$ ) 6720  
 Open circuit voltage 11503  
 Open dumps 5707  
 Open fuel cycle (once-through cycle) 4050  
 Open loop control 11946  
 Open Loop System 4133  
 Open magnetic field 9469  
 Open ocean aquaculture 512, 581  
 Open ocean farming 6759  
 Open reading frame (ORF) 11985  
 Open solar flux 9796  
 Open-ocean mariculture 3556  
 Open-pit excavation 6633  
 Open-water disposal 3029  
 Operating assistance/expenditures 1811  
 Operating reserve 8980  
 Operating speed 1856  
 Operating temperature difference 9449  
 Operating window 7694

- Operation mode 3367  
Operational crop management 9316  
Operations and maintenance (O&M) Cost 4340  
Operon 10738  
OPEX 1584  
Opioid 10636  
Opportunistic pathogen 5048  
Opportunity cost 1856  
Optical depth,  $\zeta$  8953  
Optical depth 9705  
Optical enhancement 9241  
Optical flow 10590  
Optical mass 9706  
Optical sensor 7491  
Optically shallow waters 8953  
Optimal power flow (OPF) 9333  
OPV 8125  
ORC power station 4237  
ORC 1426  
Order-of-operations thinking 10333  
Ordovician 2174  
Ore 6647  
ORF 2689  
Organic chemicals 7329  
Organic efficiency 2194  
Organic liquid electrolyte 6038  
Organic matter 149  
Organic 10140  
Organic Rankine cycle (ORC) 1608, 4237  
Organic solar cells 7932  
Organically bound tritium (OBT) 10997  
Organism 10766  
Organoleptic 10738  
Ormat energy converter (OEC) 4237  
Ornamental fisheries 6179  
Orography 6584  
ORP 11947  
ORR 3872, 8265  
ORT 5021  
Orthotopic tumor 3151  
Orthovoltage x-rays 11027  
Osmotic energy 6345  
Osmotic pressure 2897  
Osmotic stress 5315  
Osmotic tolerance 5315  
OSPAR 8388  
OTEC 7296  
OTEC transfer function 7296  
OUR 11947  
Outage 4237  
Outbreaks 8125  
Outbreeding depression 6386  
Output variables 7007  
Ovarian follicle 10886  
Overall mass transfer coefficient 2016  
Overcharge 6122  
Overfire air (OFA) 8348  
Overpotential ( $\eta$ ) 6720  
Overpotential 2934  
Overturning circulation 5856  
Ovulation 10886  
Oxidation 6372, 7585, 10140  
Oxidative stability 6038  
Oxidative stress 3656  
Oxy 2163  
Oxy/FGR 2163  
Oxyfired combustion 2149  
Oxygen ionic conductor 3887  
Oxygen reduction reaction (ORR) 7731, 7757, 8328  
Oxygen stoichiometry 2934  
Oxythermal parameter 5673  
Ozone hole 10130  
Ozone layer 168  
Ozone 206, 10130  
Ozone-depleting substance (ODS) 10130  
*P* 12202  
*P* 1584  
*p* 5500, 12202  
P3HT poly(3-hexyl thiophene) 7554  
Pacemaker 6498  
PAFC 3872, 7866  
PAH 9156  
Paleoclimatology 9796  
PAN 7866  
Pandemic 5048, 7384  
Pantograph 1856  
Paper insulated lead covered (PILC) 11159  
PAQ 6865  
PAR irradiance 7902  
PAR 2615  
PAR waveband 7902  
Parabolic trough collector ("PTC") 7619  
Parallel hybrid vehicles 5084  
Paramagnetic 1646

- Parameter space 2098  
Parameterization 622, 3211  
Parasite 149  
Parasitic loads 5135  
Parasitic power, parasitic losses 2349  
Parasitism 149  
Parasitoid 149  
Paratenic host 12018  
Paratransit 1834, 1856  
Parthenote 6150  
Partial discharge 11159  
Partial oxidation (POx) 3956  
Participation 565  
Participation rate 11655  
Particle bombardment 2584  
Particle Filter 6951  
Particulate 5673  
Particulate matter, 10  $\mu\text{m}$  206  
Particulate matter, 2.5  $\mu\text{m}$  206  
Particulate matter (PM) 4237  
Particulate matter 168, 206  
Particulates 11291  
Partition coefficient ( $K_d$ ) 7007, 11220  
Partitioning 10140  
Passenger capacity 1834  
Passivating layer 7194  
Passivation 9197  
Passive house building 7629  
Passive microwave sensor 7491  
Passive 7640  
Passive remote sensing 310  
Passive survivability 3675  
PassivHaus™ 3675  
Patch dynamics 5772  
Patchiness 149  
Patchy landscape 150  
Pathogen 498, 5347, 6319, 6605, 10694, 10738  
Pathogenesis 5048, 7384, 12018  
Pathogenic 5048  
Pathogenicity factors 10694  
Pathogenicity island 5048  
Pathogenicity 9157, 10694  
Pathogen/pathogenic 10852  
Pathogens 2259, 7667, 8688, 11873  
Pattern analysis 5773  
Pattern literacy 8856  
Pattern 3326  
Pavement markings 5935  
Pay back time 7932  
Pb 5881  
 $\text{PbO}_2$  5881  
 $\text{PbSO}_4$  5881  
PC 2163  
PCBM ([6,6]-phenyl  $\text{C}_{61}$ -butyric acid methyl ester) 7554  
PCBs 9157  
PCC Streetcar 5973  
PCDD/Fs 5296  
PCR 2689  
PC/SC 2163  
PC/USC 2163  
PDC 10935  
Peak section load 1834  
PE-based 11159  
Pedagogy 3201  
Pedestrian automatic gate 5935  
Pedestrian 5935  
Pedestrian-light rail at-grade crossing 5935  
Pedestrian-oriented development 169  
PEFC 3872  
Pegmatite 11202  
Pelagic 1959, 7007  
Pelletizing 1067  
Pellets 9821  
PEM (polymer electrolyte membrane) fuel cell 9589  
PEM 372  
PEMFC 372, 7694  
Pentose fermentation 961  
People mover 1857  
Peptide 498, 10738  
Perched aquifer 4202  
Perennial 1269  
Perfluorinated sulfonic acid containing polymer (PFSA) 8328  
Perfluoro sulfonic acid ionomers 6539  
Perfluorosulfonic acid (PFSA) 7757  
Perforated city 11362  
Perforation 5836  
Performance decay 7866  
Performance standards 9174  
Perinatal stage 3621  
Period 2424  
Periphyton 7007  
Permaculture 8856

- Permafrost 280, 330, 2761, 9696  
Permanent magnet material 18  
Permanent magnet synchronous machine (PMSM) 17  
Permeability 3501, 4163, 4179, 4202, 4415, 7007, 9001, 10140  
Permeable reactive barriers 10403  
Permeate water 2897  
Permian 2174  
Persistence 10657  
Persistent and bioaccumulative toxins (PBT) 3443  
Persistent organic pollutants (POPs) 7329, 10140  
Persistent poliovirus infection 8125  
Personal care products 11911  
Personal construct theory 10361  
Perturbed physics ensemble 2098  
Pest 5428  
Pesticide 10738  
PET 3997, 5909  
Petrol-diesel 1026  
Petrophysical 330  
PF 7156  
pH 4237, 7229  
Pharmaceuticals 11911  
Pharmacognosy 8024  
Phase diagram 7527  
Phase I reactions 12293  
Phase II reactions 12293  
Phase III transport 12293  
Phasor 12079  
phen 5174  
Phenology 2540  
Phenome 1  
Phenotype 1, 150, 1676, 1741, 9359, 10738  
Phenotype/phenotypic 10852, 10886  
Phenotypes 436  
Phenotypic selection 6426  
Phenotyping 1, 8013  
Phenylketonuria 10852  
Phenylpropanoids 10738  
Pheromones 5428  
PHEV 7847, 8112, 9293  
Photoassimilates 2639, 4551  
Photoautotrophy 347  
Photocatalysis 7881, 9563  
Photocatalyst 7881  
Photocatalytic water splitting 7881  
Photochemical smog 11291  
Photoelectron 6068  
Photo-Fenton 9563  
Photoinhibition 347  
Photolysis 9049  
Photon cutting 9412  
Photon 8537, 8560  
Photoperiod sensitivity 2540  
Photoreactor 9563  
Photorespiration 1476  
Photosphere 9469, 9796  
Photostationary steady state 11311  
Photosynthesis 347, 6372, 10738  
Photosynthetic action spectrum 7902  
Photosynthetic active radiation (PAR) 2661  
Photosynthetic efficiency 1476  
Photosynthetic photon flux density (PPFD) 7902  
Photosynthetically active radiation (PAR) 7902  
Photosynthetically available radiation (PAR) 8953  
Photosystem 347  
Phototaxis 11376  
Photovoltaic capacity 7935  
Photovoltaic (effect) 1977  
Photovoltaic electricity generation 7935  
Photovoltaic module and photovoltaic system 7935  
Photovoltaic (PV) energy system 7936  
Photovoltaics 7932, 9706  
Photovoltaics (PV) 7935  
Phreatic 11633  
Phreatomagmatic 11613  
Phthalocyanines 7554  
Phycotoxins 4819  
Phyllochron 2540  
Phylogenetic tree 8125  
Physical signal extraction 3108  
Physical-mechanical properties 9821  
Physicochemical conversion 1199  
Physisorption 4584  
Phytase 10839  
Phytate (phytic acid) 1676, 10738  
Phytic Acid 10839  
Phytoalexin 2559  
Phytochemicals 10738  
Phytomer 2540  
Phytoplankton 6372, 7007, 8201  
Phytoremediation 10403  
PIC 1299



- Picornaviridae* 8125  
 PID controller 11947  
 p-i-n solar cell 9241  
 Piscivorous 7007  
 Pitchblende 6688  
 PJ 1489  
 pkm 1584  
 Place attachment 10361  
 Place identity 12218  
 Place 8856, 10361  
 Placer 11202  
 Placing on the market 10766  
 Plage 9469  
 Planar device 9886  
 Plane jet 10975  
 Plankton 7007, 8201  
 Plant breeding 6693  
 Plant cell culture 6519  
 Plant growth 11376  
 Plant growth regulators – (PGRs) 6201  
 Plant molecular pharming 8024  
 Plant oil fuel 8081  
 Plant operating mode 1400  
 Plant productivity 1  
 Plant stress 4551  
 Plant-based expression 8073  
 Plantibodies 8073  
 Plantship 7296  
 Plasma-enhanced chemical vapor deposition (PECVD) 9241  
 Plasmid 498, 5048, 10738  
 Plasticity 463, 10739  
 Plastid 8059, 10739  
 Plate 6938  
 Plate tectonics 4179  
 Platform 6405  
 Pleiotropic 10739  
 Pleiotropic effects 8308, 10852  
 Pleiotropy 6426  
 Pleistocene 11613  
 Plug-in hybrid electric vehicle (PHEV) 3471, 10503  
 Plug-in hybrid 5083  
 Plume 10975  
 Pluripotent 7217  
 Pluripotent cell 10895  
 Plus-energy buildings 8373  
 Plutonium (Pu) 7194  
 PM 2164  
 PM<sub>10</sub> 244, 11291, 11311  
 PM<sub>2.5</sub> 244, 11291  
 PMEP 5500  
 PMU 10935, 12079  
 pn-junction 1977  
 Pocket plate electrodes 6938  
 POCP 1584  
 Point mutation 10886  
 Point source 4238, 5048, 9049  
 Point sources 169  
 Point (stationary) sources of air pollutants 11292  
 Point-to-point 7778  
 Polarization,  $\eta = V_{OC} - V(q, I, \dots)$  740  
 Polarization 310, 6720  
 Polarization resistance 2934  
 Policulture (also intercrop) 10036  
 Poliomyelitis 8125  
 Poliovirus 8125  
 Polysilicon or polycrystalline silicon 7936  
 Pollutant 12293  
 Pollution prevention 8771  
 Polybenzimidazoles (PBIs) 8173  
 Polychlorinated biphenyls (PCBs) 10140  
 Polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDD/Fs) 4880  
 Polyclimax 3278  
 Polyclonal 10739  
 Polycrystalline thin films 9394  
 Polyculture 150, 533, 6309, 10317  
 Polycyclic aromatic hydrocarbons (PAHs) 1628, 10140  
 Polyethylene (PE) 11159  
 Polygeneration 1426  
 Poly-generation 5135  
 Polygenes 2528  
 Polyketide 498  
 Polymer electrolyte membrane (PEM) 8174, 8204  
 Polymer 10739  
 Polymerase chain reaction (PCR) 5382, 6319  
 Polypeptide 8125, 10739  
 Polyploid 2689  
 Polysaccharides 9110  
 Ponor 5645  
 POPs 9157  
 Population exposure 169  
 Population genetics 415

- Population 10085  
 Porosity 10140, 11263  
 Position effect 10671  
 Positional cloning 2689, 6426  
 Positive control device 5935  
 Positive electrode 6122  
 Positive feedback 2510, 9696  
 Positron 8560  
 Post-closure plan 5733  
 Post-combustion capture 2149  
 Posterior probability 2098  
 Postpolio syndrome 8125  
 Posttranscriptional gene silencing (PTGS) 10671  
 Posttranscriptional modification 10739  
 Posttranslational modification 8059  
 Posttranslational processing 8125  
 Potable water 2078, 2319, 8688, 11873  
 Potential 1532  
 Potential temperature 4909  
 Potential vorticity 5856  
 Potential yield 2720, 10036  
 Potential yield water limited 2720  
 Potentially responsible party or PRP 2005  
 Pour point 1026  
 Power capacity 4221, 4340  
 Power collection system (wind turbines) 7425  
 Power conversion efficiency (PCE) 6566  
 Power curve 6584  
 Power density and specific power 709  
 Power density 3427  
 Power electronic converter 10542  
 Power electronics 5084  
 Power frequency 11159  
 Power plant 4238  
 Power plants 11481  
 Power 4238  
 Power purchase agreement (PPA) 7936  
 Power quality 12135  
 Power station 4238  
 Power-to-heat ratio 8081  
 Pozzolan 3821  
 PPA process 8174  
 ppy 5173  
 PR 9432  
 Practical energy density or specific energy 709  
 Prandtl's mixing length 2048  
 Prebiotics 6354  
 Precautionary principle 566, 10261  
 Precipitable water 9706  
 Precipitates 9197  
 Precipitation 4238, 10140  
 Precision agriculture 5428  
 Precombustion capture 2149  
 Precursor pathway of PCDD/F formation 6976  
 Predation 150  
 Predator 150, 7007, 10062  
 Prediction 2119, 2464  
 Pre-erythrocytic 6291  
 Preferential flow 7667, 10140  
 Pregnancy 3621  
 Preharvest sprouting 9145  
 Preimplantation embryo 10815  
 Preparatory behavior 3082  
 Pre-reforming 3956  
 Presentation 11655  
 Pressure-retarded osmosis 2897  
 Preterm birth 3621  
 Pretreatment 961  
 Prevalence 4998, 11130  
 PReVENT 6951  
 Price elasticity of demand 1532  
 Price 4238  
 Primary battery 672  
 Primary breeders 8308  
 Primary cell 6498  
 Primary control 12098  
 Primary energy saving 9509  
 Primary particles 244  
 Primary pollutants 169, 11311  
 Primary producer 3306  
 Primary production 150  
 Primary productivity 7007  
 Primary roots 9062  
 Primary standards or guidelines 206  
 Primary standards 169  
 Primary trace atmospheric gas or particles 310  
 Primitive equations 12062  
 Primordial germ cells 639  
 Primordial 8468  
 Prion 10852  
 Prior probability (marginal probability) 2098  
 Privatization 1811  
 Probiotic 6354  
 Process integration 961

- Processed refuse fuel (PRF) 11787  
 Processing 11655  
 Produced energy 11839  
 Producer gas 1426  
 Product gas 1445  
 Product gas treatment 1445  
 Product gas utilization 1445  
 Production trait 10886  
 Production traits 8308  
 Production zone 4202, 9001  
 Productivity 150  
 Products 5501  
 Profiling 10739  
 ProFusion 6951  
 Promoter 1676, 2584, 10739, 10852, 10886  
 Promoter trap 7217  
 Promotion 3596  
 Pronuclei 7217  
 Pronucleus 10865  
 Proof-of-payment (POP) Fare Collection System 5973  
 Proofreading 8125  
 Prooxidant 3656  
 Propagule pressure 5548  
 Proportional-integral (PI) controller 672  
 Protease inhibitors 4998  
 Protease 4998  
 Proteasome inhibitor 3151  
 Protective action 3516  
 Protein 10739  
 Proteolysis 4013  
 Proteomics 10739  
 Protista 6354  
 Protocrystalline silicon 9241  
 Proton conductivity 8174  
 Proton exchange membrane (PEM) 3860, 7757  
 Proton exchange membranes 6539  
 Proton-exchange membrane fuel cells (PEMFC) 7731  
 Protonic conductor 3887  
 Proto-oncogene 3596  
 Protoplast fusion 10739  
 Protoplast 10739  
 Protozoan pathogens 8758  
 Provoked poliomyelitis 8125  
 PRT 7778  
 Pseudo-capacitor 6769  
 Pseudofeces 6759  
 psi 2164  
 $P_1$  5500  
 $P_2$  5500  
 $P_3$  5500  
 $P_{3a}$  5500  
 $P_4$  5500  
 $P_5$  5500  
 $P_6$  5500  
 $P_7$  5500  
 $P_b$  5500  
 $P_e$  5500  
 $P_i$  5500  
 $P_{in}$  5500  
 $P_{limit}$  5500  
 Pt mass activity 7731  
 p(t) 7181  
 PT 9001  
 PTFE® 7866  
 Pt-specific activity 7731  
 Pu 7181  
 Public acceptance 12218  
 Public good 10449  
 Public involvement 10014  
 Public perception 2319  
 Public transport 1834  
 Public transport service 1811  
 Public transportation (also called transit, public transit, or mass transit) 5935  
 Public transportation 10923  
 Public transport/transit 806  
 Public-private partnership 1834  
 Public-private partnership (PPP) 1857  
 Public-private partnerships/models 1811  
 Pulse power efficiency 3471  
 Pulsed columns 7142  
 Pump-to-wheels (PTW) 10503  
 Purchased transportation services 1811  
 PUREX 7142  
 Purifier 4238  
 PV cells, modules, systems 8373  
 PV: photovoltaics 8373  
 PV 7181, 9432  
 PVC 1145, 3997, 10577  
 PVR 8125  
 PVR Tg21 transgenic mouse 8125  
 py 5173

- Pylon (PTC) 7619  
 Pyranometer 9673, 9731  
 Pyrhelimeter 9673  
 Pyrochelates 8265  
 Pyroclastic 11633  
 Pyroclastic flow or pyroclastic density current 11613  
 Pyrocumulus 10117  
 Pyrolysis (of coal) 2222  
 Pyrolysis 1518, 1608, 3997, 5235, 7457  
 Pyrolysis-biochar system (PBS) 846  
 Pyrophoric 8468  
 Pyroprocessing 4050, 7142  
 Q 5174  
 q 5174, 7156  
 QA 372  
 QMRA 6605  
 $Q_{HV}$  5500  
 $Q_{HV,f}$  5500  
 $Q_{HV,i}$  5500  
 QTL 4070  
 QTLxE 4070  
 Quad 11202  
 Quality assurance for daylight control 2847  
 Quality of life 10361  
 Quality of service 1819  
 Quality protein maize (QPM) 1676  
 Quantitative genetics 415  
 Quantitative microbial risk assessment 8758  
 Quantitative PCR 6319  
 Quantitative trait loci 10739  
 Quantitative trait loci (QTL) 2964  
 Quantitative trait loci (QTLs) 2528  
 Quantitative trait locus 2689, 6426  
 Quantitative trait locus (QTL) 1, 389, 473, 6693  
 Quantum yield 9563  
 Quasispecies 8125  
 Quaternion 10590  
 Quench 9589  
 Quorum sensing 5048  
 $\bar{R}$  5500  
 R 12202  
 r 5500, 12202  
 r 7181  
 R1 energy efficiency factor 11839  
 R1 formula 11839  
 R1/D10 11759  
 Radar 280  
 RADAR 6951  
 Radarsat 7491  
 Radial hexagon 4617  
 Radial line (or route) 1857  
 Radial pentagon 4617  
 Radial transit route systems 5973  
 Radiance,  $L(\lambda)$  8953  
 Radiance 8919, 9706  
 Radiation dose 5573, 11149  
 Radiation 2349, 3023, 4905  
 Radiation use efficiency 2720  
 Radiation use efficiency (RUE) 2661  
 Radiation weighting factor 8388  
 Radiative balance 169  
 Radiative forcing 111, 622, 652, 8879, 9796  
 Radiative transfer 9706  
 Radiative transfer theory (RTT) 7902  
 Radical (or free radical) 3656  
 Radioactive 5560, 8468  
 Radioactive half-life ( $t_{1/2}$ ) 8598  
 Radioactive Waste 4774  
 Radioactivity 8448  
 Radioisotope 8468  
 Radiological survey 7056  
 Radiometer 7491  
 Radiometers 280  
 Radiometry 9706  
 Radionuclide deposition 8634  
 Radionuclide or radioisotope 10403  
 Radionuclide 3023, 4905, 8448, 8468  
 Radionuclide washout 8634  
 Ragone plot 709, 3847  
 Rainscreen 3676  
 Rainwater harvesting 2319, 8688  
 Rainwater 8688  
 Rainwater storage tank 8688  
 Raman spectroscopy 5382  
 Range image 3171  
 Rankine cycle 6805  
 Rapeseed oil fuel 8081  
 Rapid transit 1834, 5973  
 RAS 6309, 10935  
 Raster 10621  
 Rate law 4094  
 Rate of charge/discharge,  $nC$  740  
 Rated wind speed 7394  
 Rating (labeling) 8702

- Raw gas 1445  
 Raw material cost 4617  
 Rayleigh scattering 9706  
 RCC 8125  
 RCM 8903  
 RCT 8125  
 R&D 1145, 2164, 11069  
 R&D&D 1040, 1427, 1584  
 RD&D 2164  
 RDD 8468  
 RDF 3997, 5296, 11759  
 RDT 11069  
 Reactants 5501  
 Reaction kinetics 6720  
 Reaction norms 463  
 Reaction step 4617  
 Reaction yield 4617  
 Reactive oxygen species (ROS), sometimes reactive oxygen intermediates (ROI) 3656  
 Reactive power 9334, 12135  
 Reactive transport model 4775  
 Reactivity 3787, 7086  
 Reactor 7086  
 Realizable biomass potential 1174  
 Real-sky radiation 10621  
 Real-time market 12254  
 Real-time passenger information (RTPI) 1857  
 Reanalysis dataset (Global Data) 6584  
 Rearrangement (in relation to polioviruses) 8125  
 Reburning 8348  
 Recalcitrant carbon 846  
 Receiver efficiency 2349  
 Receiver 6031  
 Receiver (PTC) 7619  
 Receiver, solar receiver 2349  
 Receptors 6345  
 Recharge 4221, 5645  
 Rechargeable (secondary) battery 7546  
 Reclaimed asphalt pavement (RAP) 2391  
 Reclaimed water 2319, 8688, 11873  
 Reclamation 6647, 6665  
 Recognition element 1646  
 Recombinant DNA 10739  
 Recombinant inbred lines 6426  
 Recombinant protein 10865  
 Recombinant proteins 639  
 Recombinase 10815  
 Recombination 9412  
 Recovery 7798  
 Recreational waterborne illness 8758  
 Recruitment 6386  
 Rectangularity 10036  
 Rectifier 5084  
 Recultivation 6633  
 Recycled aggregate (RA) 2391  
 Recycled concrete aggregate (RCA) 2391  
 Recycled vs. recyclable 9026  
 Recycling 8771, 9026, 9979, 10014, 11699  
 Redox couple 740  
 Redox cycling 3656  
 Redox 10140, 11947  
 Redox signaling 3656  
 Redox stability 9852  
 Reduction 6372, 10140  
 Reemergence 8125  
 Re-entrainment 7296  
 Reference level 3516  
 Reference wind 6584  
 Refining 7822  
 REFIT 12218  
 Reflection 8953  
 Reflector 6031  
 Reflectors – contoured prismatic, mirror and diffusing blinds 2847  
 Reforestation 1532  
 Reformate 3860  
 Refraction 8953  
 Refuse-derived fuel (RDF) 5235, 11787  
 Regenerate 8856  
 Regeneration 10739  
 Regenerative braking 8848, 10542  
 Regenerative design 8856, 10333  
 Regenerative development 8856  
 Regional flow System 4806  
 Regional resource assessment 6584  
 Regolith 5645  
 Regular 1857  
 Regulating capacity 12098  
 Regulation 4238  
 Regulations 7822  
 Regulatory gene 10739  
 Regulatory sequence 10739  
 Regulon biotechnology 1  
 Rehabilitation 6633, 11699

- Reinforced concrete 5645  
 Reintroduction 6386  
 Relative biological effectiveness (RBE) 5573, 11027  
 Relative humidity 310, 9696  
 Relative humidity (RH) 894  
 Relaxation 6068  
 Release 2005  
 Reliability 1834, 2781, 3099, 4238  
 Reliability versus cost reduction 9852  
 Relocation 3516  
 Remedial action 3516, 10140  
 Remediation 3516, 6633, 6647, 10140, 10435  
 Remedy or remedial action 2005  
 Remobilization 8388  
 Remote sensing 3358  
 Remote sensing reflectance,  $R_{rs}(\lambda)$  8953  
 Remotely operated vehicle (ROV) 3151  
 Removal 2005  
 Renaturation 11362  
 Renewable electricity standard 10449  
 Renewable energy certificates 10449  
 Renewable energy 1231, 2977, 4238, 11787  
 Renewable feedstock 3933  
 Renewable fuel 5462  
 Renewable 4221  
 Renewable resources 1269, 4238, 11933  
 Renewable water resources 11873  
 Repletion 9027  
 Replication 1002, 10739  
 Reporter gene 2584  
 Representative concentration pathways (RCPs) 5399  
 Reproductive performance 10886  
 Reproductive/breeding efficiency 10886  
 Reprogramming 7217  
 Research models 1928  
 Reserved lane 5021  
 Reserves (operating) 12254  
 Reserves (planning) 12254  
 Reserves 2174, 7446  
 Reservoir host 12018  
 Reservoir 3501, 4202, 4238, 4415, 9001  
 Reservoir-triggered seismicity 2788  
 Residence time 5673, 9049  
 Residential solid wastes (RSW) 5707  
 Residual (liquid) saturation 4202, 9001  
 Residual radioactivity 7056  
 Residual time series 9744  
 Residual waste 11655  
 Resilience 169, 533, 2929, 3342, 3450, 4674  
 Resistance 10694, 12293  
 Resolution 12062  
 Resonance 2424  
 Resource complementarity 10036  
 Resources 330, 2174, 7446  
 Response to selection 389, 9359  
 Responsivity 9673  
 Restocking 6386  
 Restoration 6647  
 Restorative design 8857  
 Resuspension 7007  
 Retardation factor 10962  
 Retention 8689  
 Retort gas 7457  
 Retort water 7457  
 Retorting 7457  
 Retorting residue or spent shale 7457  
 Retrofit 2424  
 Retrovirus 639  
 Retroviruses 10815  
 Return period 2424  
 Reuse 2319, 8771, 9979  
 Revenue 4238  
 Reverse genetics 2689, 6426  
 Reverse osmosis 2897  
 Reverse transcriptase 4998  
 Reverse transcriptase (RT) inhibitors 4998  
 Reverse-acting gate 6449  
 Reversible hydrogen electrode (RHE) 7731  
 Reynolds number 2048, 10962  
 RF, rf 7156  
 RFC 5909  
 RFLP 2689  
 RG-AEM 372  
 Rhizobium 10740  
 Rhizomes 6020  
 Rhizosphere 9063  
 Rhyolite 11614  
 Ribonucleic acid (RNA) 10740  
 Ribosome 10740  
 Ribozyme 10740  
 Rich 5501  
 Riding horse 1795  
 Right-of-way (ROW) 1857  
 Right-of-way (r-o-w) 5935

- Right-sizing systems 10333  
 Risk analysis 10740  
 Risk assessment 207, 3516, 3621, 6605, 10140, 10435, 10713, 10740, 10766  
 Risk characterization 6606, 10740  
 Risk communication 10740  
 Risk management 10740  
 Risk 207, 3516, 4120, 4866, 6606, 10435, 10657, 10740, 10797  
 Risk-based policy 169  
 River energy 6345  
 River 9049  
 RNA interference 10852  
 RNA interference (RNAi) 2964  
 RNA (ribonucleic acid) 4998  
 RNA-dependent RNA polymerase 8125  
 RNAi 10740  
 RO 9758  
 Road construction site 3067  
 Road marking 3067  
 Roadway alignment 5645  
 Robustness 7694  
 ROC 5296, 6952  
 Rock pad 5646  
 ROI 6951  
 Rolling stock 1811  
 Rooftop 8689  
 Root architecture 9063  
 Root cap 9063  
 Root distribution 9063  
 Root hair 9063  
 Root lodging 6201  
 Root mean square (RMS) 672  
 Root morphology 9063  
 RORSAT 8468  
 ROS 9145  
 Rossby radius (of deformation) 7366  
 Rotor 7394  
 Rotor–nacelle assembly (RNA) 7394  
 Roughness length 6585  
 Route of exposure 3621  
 ROV 6405  
 RPS 12218  
 R(R)DE 8265  
 RRL 8125  
 $R_5$  5500  
 $R_6$  5500  
 $r_c$  5500  
 $R_e$  5500  
 RTG 8468  
 RTU 12079  
 RuBPc-o 2661  
 RUE 2615  
 Runoff 8634  
 Runoff water 2320  
 Rural electrification 1445  
 $r(x_i, x_j)$  7181  
 rxn 5174  
 Saccade 46  
 Saccharification 988, 11429  
 Sacrificial reactions 4617  
 Safe Zone 6098  
 Safeguards 7201  
 Safety barrier 3067  
 SAFOTEST 10740  
 SAGE 8125  
 Saharan air layer (SAL) 5071  
 Saline soil 5315  
 Salinity 7366, 12018  
 Salt tolerant plant 5315  
 Salt water 11933  
 Sanitary landfill 9979  
 Sanitary landfills 5708  
 Sankey diagram 11839  
 Saprophyte 2559  
 Satellite altimetry 2455  
 Satellite 4564  
 Saturated zone 10140  
 Saturation 4238  
 Saturation state of calcium carbonate ( $\Omega$ ) 7229  
 Savonius rotors 3397  
 SC 7156  
 SCADA 10935, 12079  
 Scale 3326, 5773, 5818, 6216  
 Scale-up 10740  
 Scaling 4238, 5773  
 Scarcity 9027  
 Scattering coefficient 310  
 Scattering 310  
 Scatterometer 7491  
 Scavenging 8388  
 SCC 4957  
 Scenario 1532  
 Scene flow 10590

- Scene understanding 3171  
scf 3956  
Scheduled speed 5973  
Schmidt and Prandtl numbers, Sc and Pr 595  
Scintillator 5560  
Scleractinia 2490  
SCNT 10815  
Scour 7425  
SCR 245, 4957  
Screenable marker 2584  
Screening models 1928  
Screw expander 4238  
Scrubber 4238  
Scrubbing 11720  
SCWR 4050  
SD 7181  
SDR 11553  
Sea ice 280, 2761  
Sea level rise 2455  
SEA 10577  
Sea ranching 6386  
Sea state 7394  
Seabed 7394  
Seafood 9079  
Seafood-associated toxins 9079  
Seasonal reproduction 10886  
Seasonal snow 280  
Sea-vegetables 9110  
Seaweed 9110  
Second crop 1098  
Second crop soybeans 4433  
Secondary battery 672  
Secondary control 12098  
Secondary effect 8308  
Secondary metabolites 3151, 6520, 10740  
Secondary or rechargeable cell 6498  
Secondary particles 245  
Secondary pollutants 169, 11311  
Secondary roots 9063  
Secondary standards or guidelines 207  
Secondary standards 169  
Secondary treatment 11873  
Second-generation bioethanol 961  
Second-generation cells 9852  
Secondhand smoke 10636  
Sediment budget 3706  
Sediment delivery ratio 3706  
Sediment mixing 8388  
Sediment 3029, 3706, 7007  
Sediment source fingerprinting 3706  
Sediment source 3706  
Sediment surface layers 9129  
Sedimentation 3706, 5673  
Sedimentation rate 7007  
Seed bank 150  
Segmentation 3171  
Segregated biomass 1174  
SEI layer 740, 6038  
SEI 1145  
Seismic 4163  
Seismic wave 2424  
Seismic zoning 2424  
Seismicity 2424  
Seismology 2424  
Selectable marker 2584, 10740  
Selection intensity (*i*) 1795  
Selection 1741, 1795, 9359  
Selective attention 46  
Selective breeding 5315, 10740  
Selective catalytic reduction (SCR) 4755, 8348  
Selective medium 10740  
Selective noncatalytic reduction (SNCR) 8348  
Selectivity 10345  
Self selection 10923  
Self-contained fluid filled (FF or LPOF or PILC) 11159  
Self-discharge 6938, 7546  
Self-discharge rate 672  
Self-oxidation 7585  
Self-schedule 12254  
Semantics 10192  
Semiconductor 7881, 9563  
Sensible heat storage 10551  
Sensitivity analysis 7007  
Sensitizer 6566  
Sensor calibration 3171  
Sentinel 5048  
Sentinel species 6179  
Separation capability 5634  
Separation factor 5634  
Separation 8795, 11655  
Separator 740, 4238, 6122, 7547, 8715  
Sequence homology 10740  
Sequences 5048



- Sera-binding tests 10740  
SERC 5909  
Series hybrid vehicles 5084  
Seroconversion index 8125  
Seroconversion 8125  
Serotype 8125, 11985  
Service operation plan 1834  
Sessile organism 3151  
Seston 6759  
Set-out rate 11655  
Setpoint 11947  
Sewage sludge gas 1089, 1618  
Sexual maturation 3621  
Sexual stage 6291  
SF 7181  
SFR 4050  
Shading for passive cooling balanced by passive solar heating 2847  
Shadowband 9706  
Shale gas 7446  
Shale oil 7457  
Shallow water collections 3151  
Shallowness approximation 7366  
Shared corridor 5950  
Shared right-of-way 5950  
Shared track 5950  
Shattering 10345  
Shear failure 3501  
Shielded cable 11159  
Shifting agriculture 150  
Shikimate pathway 10741  
Shinkansen 4929  
Ship discharge 7491  
Shockley–Queisser limit (SQ limit) 9412  
Shoot apex 2540  
Short rotation coppice (SRC) 6020  
Short rotation plants 1489  
Short turning 1857  
Shortwave 9706  
Shrinkage 5836  
Shrinking city 11362  
Shutdown separator 8715  
Shuttle 1857  
SIA 8125  
SiC 7866  
Side product of a reaction 4617  
Sideslip angle 3052, 11187  
SIDO 1145  
Sievert (Sv) 8448  
SIGMATIST 3278  
Signal Priority 90  
Signal sequence 10741  
Signal transduction 10741  
Significant quantity (SQ) 7201  
Significant wave height 7425  
SiH<sub>4</sub> 9432  
SiHCl<sub>3</sub> 9432  
Siicon solar cells 7932  
Silent circulation 8125  
Silent infection 8125  
Silent presence 8125  
Silurian 2174  
Simulation 90, 9316  
Single nucleotide polymorphism 10886  
Single nucleotide polymorphism (SNP) 473, 2964  
Single-copy transformant 10671  
Sinkhole 5646, 6633  
Sinter plate cells 6938  
SIPS 10935  
siRNA 10816, 10895  
Site density (S<sub>D</sub>) 8265  
Site evaluation 3516  
Site selection 6759  
Site-specific recombination 10741  
Siting 6585  
Skin damage 11376  
Skyshine 8537  
SL 8125  
Slag 3997, 6633  
SLI batteries 672  
SLI 5881  
Slow pyrolysis 1518  
Sludge 1174, 6309  
Sludge retention time (SRT) 11961  
Slug lines 5021  
Slurry jet 10976  
Slurry 7667  
Small interfering RNA (siRNA) 10741  
Small scale 1445  
Small-scale cogeneration unit 1400  
Smart grid 2977, 12218  
Smart growth 10923  
Smog 8879, 11292  
Smooth-pursuit movement 46

- SNAP 8468  
 SNCR 4957, 6449  
 SNG 1040, 1427, 1584  
 SNIDS 8125  
 Snow 2761  
 SNP (single nucleotide polymorphism) 7973  
 SNV 1145  
 SO<sub>2</sub> 2164  
 SOC 8112  
 Social acceptance 12218  
 Social interactions 9359  
 Socio-ecological justice 169  
 Socio-technical system 12218  
 SOEC 9904  
 SOFC 2934, 3872, 9904, 9934  
 Soil ice 2761  
 Soil microbial processes 3769  
 Soil 2430  
 Soil quality 161  
 Soil remediation 2431  
 Soil texture 1097  
 Soil water balance 5619  
 Solar air system 7641  
 Solar architecture 7640  
 Solar cavity receiver 9589  
 Solar cell conversion efficiency  $\eta$  9197  
 Solar cell 1977  
 Solar cell production capacities 7936  
 Solar cells 7932  
 Solar chemical heat pipe 9589  
 Solar concentration ratio 9589  
 Solar constant 9470, 9696  
 Solar cookers 9487  
 Solar cycle 9469  
 Solar dryer 9487  
 Solar energetic particles (SEPs) 9796  
 Solar energy utilization 9766  
 Solar field 7619  
 Solar fraction ( $F_{\text{sav}}$ ) 9449  
 Solar fuels 9589  
 Solar geoengineering 4104  
 (Solar) Irradiance (G) 9449  
 Solar irradiance 9619  
 Solar module 1977  
 Solar photochemistry 9563  
 Solar radiation database 10621  
 Solar radiation management 10161  
 Solar radiation management (SRM) 10117  
 Solar radiation 9673  
 Solar spectral irradiance (SSI) 9706  
 Solar spectrum AM 1.5 9449  
 Solar thermochemical process 9589  
 Solar updraft tower (SUT) 9766  
 Solar wind 9797  
 Solar zenith angle 11149  
 Solid Biofuel 2271  
 Solid electrolyte interface (SEI) 709  
 Solid electrolyte interphase (SEI) 6068  
 Solid oxide fuel cell (SOFC) 9886  
 Solid polymer electrolyte 6038  
 Solid polymer fuel cell (SPFC) 3860  
 Solid waste 5733, 9979, 9995  
 Solid waste composition\* 9995  
 Solid waste discarding\* 9995  
 Solid waste disposal\* 9995  
 Solid waste generation rate\* 9995  
 Solid waste generation\* 9995  
 Solid waste management system\* 9995  
 Solid waste management\* 9995  
 Solid waste recycling\* 9995  
 Solid waste reuse\* 9995  
 Solubility 4239, 10140  
 Solubility product 4094  
 Solute 5673  
 Solution 5646  
 Solvent engineering 3933  
 Solvent extraction 7142  
 Somaclonal selection 10741  
 Somatic cell count 10852  
 Somatic cell nuclear transfer (SCNT) 2964  
 Somatic cell 7217  
 Somatic nuclear cell transfer 10865  
 Sorption 9509, 11961  
 Sorption (verb: to sorb) 10140  
 Sorption/desorption 4775  
 Sorting 8795  
 Sound level ( $L_A$ ,  $L_B$ ,  $L_C$ ) 12275  
 Sound pressure level (SPL,  $L_p$ ) 12275  
 Sound pressure ( $p$ ) 12275  
 Sound speed ( $c$ ) 12275  
 Source activities 11655  
 Source apportionment 169  
 Source material 7201  
 Source reduction 8771, 9979, 10014

- Source to sink 8857  
 Source treatment technologies 2431  
 Source–sink balance 4551  
 South Pacific convergence zone 7245  
 Southern blot (DNA blot) 2584  
 SO<sub>x</sub> 9432  
 SP 1584  
 Spa 4163, 4354  
 Space charge 11159  
 Space-averaged load factor 1857  
 Spallation 8468  
 Spatial arrangement 10036  
 Spatial autocorrelation 3326  
 Spatial heterogeneity 5773  
 Spatial planning 5786  
 Spatially explicit models 5773  
 Special fissionable material 7201  
 Special nuclear material (SNM) 7201  
 Speciality chemicals 7585  
 Speciation 8388, 10051, 10140  
 Species average fitness 10062  
 Species (biological species concept) 10085  
 Species 4094  
 Species richness 150  
 Specific activity 10997  
 Specific and wide adaptation 4070  
 Specific capacity (in mAh/g or Ah/kg) 7547  
 Specific capacity 709, 9293  
 Specific energy 9293  
 Specific heat 4221, 4909  
 Specific storage 5712  
 Spectral error 7902  
 Spectral radiance  $L_{\lambda}$  9650  
 Spectral solar irradiance (SSI) 9797  
 Spectral weighting function 11376  
 Spectral-selective coating 9449  
 Spectroradiometer 11149  
 Spectroradiometry 9706  
 Spectroscopy 5560  
 Spent fuel 7142  
 Spherical harmonics 4564  
 Spillage, spillage losses 2349  
 Spin state 740  
 Splash zone 7426  
 Splice 11159  
 SPP 5909  
 Sprawl 5836  
 Spring tide 10613  
 SR 3997  
 SRC 1040, 1584  
 SRF 5296  
 SRT 1145  
 SS 1584  
 $s_1$  5500  
 $s_2$  5500  
 $s_3$  5500  
 $s_4$  5500  
 $s_5$  5500  
 S&T 11069  
 Stability 4239  
 Stabilized efficiency 9241  
 Stable coexistence 10062  
 Stable transformation 2584  
 Stack 8205, 9934  
 Stakeholders 406, 1819, 8125  
 Stand 4380  
 Stand-alone furnaces 1351  
 Standard test conditions (STC) 1977  
 Standards 207  
 Starch 988  
 State Director 5733  
 State of charge 740  
 State of charge (SoC) 672  
 State of health (SoH) 672  
 State 5733  
 Stationarity 3326  
 Stationary sources 207, 8879  
 Statistical entropy analysis (SEA) 11708  
 Statistical entropy 11708  
 Status of development 1400  
 Steam cycle 7086  
 Steam methane reformation (SMR) 5135  
 Steam methane reforming (SMR) 3956  
 Steam Rankine cycle 4239  
 Steam turbine 6806  
 Steam zone 4202, 9001  
 Stem failure moment 6201  
 Stem lodging 6201  
 STEM 3201  
 Stereo camera system 6952  
 Stereo vision 10590  
 Stereotypy 7973  
 Steric sea level 2455  
 Stewardship 533, 564

- Stilbenes 10741  
 Stirling engine 1608  
 Stochastic effect 5573  
 Stochastic effects 11027  
 Stochastic model 10192  
 Stock enhancement 6386  
 Stoichiometric coefficient 4618  
 Stoichiometric factor (SF) 4618  
 Stoichiometric 5501  
 Stomata 1476  
 Stomatal resistance 3211  
 Storage 11655  
 Storage Reserve (capacity) 4120  
 Storage Resource (capacity) 4120  
 Storm water runoff 4730  
 Stormwater harvesting 10095  
 Stormwater 8689  
 Stormwater runoff 4698  
 STR 1584  
 Strategic crop management 9316  
 Stratification 5673, 7007  
 Stratification thermal time index 9145  
 Stratosphere 310, 2510, 9619, 9706, 9797, 10130, 11149  
 Stratospheric aerosols 10117  
 Street canyon 11312  
 Streetcar 1857, 5973  
 Stress caused by volume changes 9852  
 Stress 1184  
 Stressor 1184  
 Stressors 6345  
 Stripping ratio 2174, 6665  
 Strombolian 11614  
 Structural gene 10741  
 Structural genes (in relation to polio) 8125  
 Structure activity relationships (SARS) 6790  
 Structured decision making 3342  
 Structured (regular)/unstructured (irregular) grid 7366  
 STS marker 2689  
 Sub 4380  
 Subbituminous coal 8348  
 Subgrid heterogeneity 3211  
 Subgrid scale 623  
 Subjective experience 10865  
 Subjective report 3108  
 Submerged longline 6759  
 Subsea template 6405  
 Subsidence 4163  
 Substantial equivalence 10741  
 Substrate 10741  
 Sub-structure 7394  
 Subsurface 10141  
 Subtropical zones 10390  
 Subunit vaccine 6291  
 Suburb 11325  
 Suburban rail 806  
 Suburbanization 5786  
 Successional stages 150  
 Sulfur dioxide 207  
 Sulfur dioxide (SO<sub>2</sub>) 8348  
 Sulfur oxides 8348  
 Sulfur poisoning 9852  
 Summer solstice 9619  
 Sun 9469  
 Sun sensor 7619  
 Sunphotometry 9706  
 Sunshade 10161  
 Sunspot number 9469  
 Sunspot 9469  
 Super-Alfvénic 9797  
 Superbinary vector 2584  
 Supercapacitor or electrochemical capacitor 6769  
 Superconductors 6241  
 Supercritical fluid 3933, 10169  
 Superinsulation 7630  
 Supervirulent 2584  
 Supplementary cementing material 3821  
 Supplementation 6386  
 Support structure 7394  
 Support/supported 4584  
 Surface freshwater flux 7245  
 Surface functionality 6769  
 Surface jet 10976  
 Surface longline 6759  
 Surface mixed layer 7268  
 Surface runoff 7667, 8689  
 Surface solar radiation 9731  
 Surface water 11933  
 Surface-enhanced Raman spectroscopy (SERS) 5382  
 Surface-mounted PMSM (SM-PMSM) 18  
 Surtseyan type 11614  
 Susceptibility 3621  
 Suspended matter 7007

- Suspended solids 3029  
Suspension culture 6758, 8059  
Sustainability assessment 8702  
Sustainability 1002, 1489, 1741, 2061, 3201, 3450, 3556, 3933, 4643, 5733, 5836, 8024, 8689, 10317, 10435, 10713, 11069, 11699  
Sustainable 4221, 10482  
Sustainable agriculture 2528  
Sustainable battery 7547  
Sustainable building 10333  
Sustainable design 10299  
Sustainable development potential 1532  
Sustainable development 566, 1002, 1857, 2529, 5733, 11699  
Sustainable energy 11787  
Sustainable mining 6633  
Sustainable 1269  
Sustainable remediation 1628, 10435  
Sustainable urban drainage systems 4674  
Sustainable water use 2320  
Sverdrup 5856  
SW 7181  
Swing gate 5935  
Switched reluctance motor 10542  
Synchrophasor 12079  
SYNCOM 6449  
Synergy 5135  
Syngas 1608, 9589  
Syngas (synthesis gas) 1427  
Synonymous nucleotide substitutions 8126  
Synteny 6426, 10742  
Synthesis gas 11429  
Synthesis gas (syngas) 2222, 3956  
Synthesis 6216  
Synthesis tree 4618  
Synthetic aperture radar 280  
Synthetic aperture radar (SAR) 8939  
Synthetic biofuel 1427  
Synthetic 1427  
System boundary 5893  
System (electric) 4239  
System 4239, 9316  
Systematic error 2098  
Systemic acquired resistance (SAR) 10694  
Systemic herbicide 10345  
Systems biology 10742  
Systems thinking 8857  
  
T 12202  
t 7181, 11202  
T3 6449  
Tactical crop management 9316  
TAG 8126  
Tailings dams 6665  
Tailings ponds 6665  
Tailings 6647, 6665  
Tan  $\delta$  (TD) 11159  
Tandem 9412  
Tangential route (or Line) 1857  
Tannins 10742  
Tap density 740  
Taproot 9063  
Taproot system 9063  
Tar sand mining 7798  
Target bond forming reactions 4618  
Target bond map 4618  
Target load 169  
Target site 10345  
Tariff and non-tariff barriers 1002  
Taurine 6179  
Taxonomy 10192  
TCI 1040, 1584  
TCR 2164  
TD 8126  
T-DNA 2584, 8059, 10742  
TEC 2934  
Technical biomass potential 1174  
Technical efficiency 2720  
Technical potential 1532  
Technology push/market pull 1819  
Tectonic plates 2424  
TED 1145  
Teleconnection 9619  
Teleconnections 2119, 7245  
Temperate zones 10390  
Temperature inversion 8879, 11312  
Temperature polarization 2897  
Temporal 8879  
Temporal separation 5950  
TEN 4929  
TENORM 8468  
Tensile failure 3502  
TeO<sub>2</sub> 9432  
TEQ 5296  
Teratogenic 10636, 11027

- Terminal 6938  
Termination 11159  
Terminator 2584  
Terra preta 846  
Terrestrial 8468  
Tertiary 2174  
Testing 11737  
Tetraploid 6150  
TEV 4784  
Texturization 9197  
TF 7156  
TGA 5296  
TGV 4929  
th 1040  
The department of energy 6688  
The El Niño–Southern Oscillation (ENSO) 7245  
The National Priority List or NPL 2006  
The southern ocean 8656  
The sublime 10361  
The Superfund 2005  
The United States Nuclear Regulatory Commission 6688  
The wind atlas method 6585  
Theoretical biomass potential 1174  
Theoretical energy density, specific energy, capacity 709  
Theoretical potential 1532  
Thermal anomaly 4222  
Thermal Bridge free 7630  
Thermal bridge 3675  
Thermal comfort 6865  
Thermal conductivity 4222, 7194  
Thermal drawdown 3502  
Thermal expansion 2455  
Thermal fuel power 8081  
Thermal infrared radiation (TIR) 8919  
Thermal mass 10333  
Thermal neutrons 7087  
Thermal pollution 4239  
Thermal runaway 6098, 6123  
Thermal stability index 6976  
Thermal time 2540  
Thermalization 9412  
Thermistor 4909  
Thermobitumen 7457  
Thermochemical biohydrogen generation 5116  
Thermochemical conversion 1199, 1518, 2271  
Thermochemical heat storage 10551  
Thermocline 2349, 4909, 7007, 7245, 7366, 8655  
Thermodynamic system 3306  
Thermohaline circulation 2510, 5856, 7366, 8655  
Thickness sensor 7491  
Thin film 1977  
Thin stillage 988  
Thin-film cells, a-silicon (a-Si), mc-silicon (mc-Si) 8373  
Thin-film solar cells 9394  
Thiol 3656  
Third-generation cells 9852  
Thorium 6688  
Thorium (Th) 7194  
THORPEX 5071  
Three-phase boundary 6720  
Threshold dose 3253  
Threshold energy 6098  
Threshold power 6098  
Ti Plasmid 10742  
Tidal basin 10613  
Tidal currents 10613  
Tidal energy 6345  
Tidal stream 10613  
Tides 10613  
Tiered approach 6790  
Tight gas 7446  
Tight ultrafiltration (UF) membrane 10530  
Tile method 3211  
Timed-transfer system (TTS) 1857  
Timeform handicap ratings 1796  
Time-for-space substitution 3278  
Time-of-use pricing 10449  
Tipping point 10118  
Tire forces 3052, 11187  
Tissue culture 10742  
Tissue tolerance 5315  
TJ 1489  
TL 5173  
T-lymphotropic 4998  
T-NAWDEX 5071  
TNT 8468  
TOC 4957  
TOD 1890  
Tolerance 12293  
Tolerance threshold 9079  
Toll 5021

- Top of atmosphere 9619  
Topographic index 3211  
Topography 6585, 10621  
Topology 9063  
Topotactic transformation 709  
TOPV 8126  
Torch thermal efficiency 8097  
Torrefaction 1067, 1608  
Total material requirement (TMR) 10403  
Total (overall) mass of waste 4618  
Total (overall) reaction mass efficiency 4618  
Total solar energy transmission (g/SHGC) 2847  
Total solar irradiance (TSI) 9706, 9797  
Tower 6031, 7394  
Toxic pollutant 3029  
Toxicity characteristic leaching procedure (TCLP) 3444  
Toxicity 1184, 3029, 10658  
Toxicity test 3265  
Toxicodynamics 12293  
Toxicogenomics 3265  
Toxicokinetics 3621, 12294  
Toxicology testing 6790  
T-PARC 5071  
tpy 5174  
Trace organics 8689, 11874  
Track 5573  
Tracking (PTC) 7619  
Traction load 5103  
Traction 5973  
Tractive effort 11481  
Traditional breeding 10742  
Traffic control devices 5935  
Traffic signal 1834  
Trait 1, 1476, 8013  
Tramway 1857  
Transactivation domain 2584  
Transboundary pollution 11312  
Transcription activator–like effector nucleases (TALENs) 10742  
Transcription 7217, 10742  
Transcriptional gene silencing (TGS) 10671  
Transcriptome 10742  
Transdisciplinarity (TD) 6179  
Transdisciplinary 566  
Transesterification 921, 1026, 1608  
Transfection 2584, 7217  
Transfer coefficient ( $F_f \text{ d kg}^{-1} F_m \text{ d L}^{-1}$ ) 8425  
Transfer coefficient  $k_{xi}$  10577  
Transfer coefficient (TC) 11220  
Transfer DNA (T-DNA) 10671  
Transfer function 8634  
Transfer 7668, 11655  
Transfer station 11655  
Transfer velocity 595  
Transferred arc 8097  
Transformant 2584  
Transformation 2584, 8059, 10742  
Transformative research 6216  
Transgene expression variability 10671  
Transgene 1676, 6520, 8059, 10742, 10797, 10852, 10886  
Transgenesis 10895  
Transgenic bird lines 639  
Transgenic bird 639  
Transgenic organism 10742  
Transgenic plant 1676, 10671, 10694, 10742  
Transgenic plants 8024, 8073  
Transgenic 2584, 4013, 10852, 10886  
Transient expression 2584, 8059, 8073  
Transit choice riders 1819  
Transit 5974  
Transit ridership 1890  
Transit signal priority (TSP) 1857  
Transit value capture 1890, 10923  
Transition metal chalcogenides 8265  
Transition 8126  
Transit-oriented development, or TOD 5973  
Transit-oriented development 169, 1811  
Transit-oriented development (TOD) 1819, 1834  
Translation 10742  
Translocation 10997  
Transmissible spongiform encephalopathy 10742  
Transmission 4239  
Transmissions 11481  
Transparent conductive oxide (TCO) 9241  
Transpiration 5818  
Transplastomic plants 8073  
Transplastomic 2584  
Transport equation 8537  
Transport mechanisms 10141  
Transport model 9129  
Transport 11655  
Transport vehicle 11655

- Transportation demand management 90  
 Transportation Equity Act for the 21st Century 1811  
 Transportation 10482  
 Transposon 2690, 10345, 10742, 10815  
 Transuranic waste (TRU) 8589  
 Transuranics 8598  
 Transversal 6031  
 Transversal IAM 6031  
 Transversions 8126  
 Travel time savings 1812  
 Traveler information 90  
 TRE 5909  
 Treatable flow 10095  
 Treatment measures 10095  
 Treatment 11737  
 Treatment train 10095  
 Tremor 11633  
 Triacylglycerol (TAG) 11429  
 Triassic 2174  
 Tributary 7007  
 Trickle charging 6938  
 Tri-generation 1661  
 Trigger for thermal runaway 6098  
 Trigger point 4202  
 Triglyceride 6896  
 Trip 4380  
 Triple bottom line 10261  
 Triple phase boundary (TPB) 8205  
 Tritiated water (HTO) 10997  
 Tritium 10997, 11027  
 Trolley bus 5974  
 Trophic level 822, 3300, 7007  
 Trophic transfer 4819  
 Tropical biennial oscillation (TBO) 6741  
 Tropical health 11069  
 Tropical zones 10390  
 Tropopause 623  
 Troposphere 169, 310, 2510, 9620, 9706, 9797  
 Trotter 1796  
 Trough 6031  
 Truck 1857  
 Trunk pipeline 6405  
 Trypsin inhibitors 10742  
 TSO 10935  
 $T_1$  5500  
 $T_4$  5500  
 $T_5$  5500  
 $T_6$  5500  
 $T_{\text{cv,adiabatic}}$  5500  
 $T_e$  5500  
 $T_H$  5500  
 $T_i$  5500  
 $T_L$  5500  
 $T_r$  5500  
 T-Test 3099  
 Tuberculosis 498, 4998, 11130  
 Tubular plate electrodes 6938  
 Tumor suppressor gene 3596  
 Tunneling Effects 4929  
 Turbidity 3029, 8919  
 Turbine generator 4239  
 Turbine 4239, 10613  
 Turbulence intensity 6585  
 Turbulence 6585  
 Turbulent diffusion coefficient 2031, 2048  
 Turbulent diffusion 2031, 2048, 10955  
 Turnover frequency (TOF) 3933, 8265  
 Twist-off 4380  
 Two (2)-phase zone 4202, 9001  
 Two-class problem 6952  
 Two-electron reduction 6038  
 Twomey effect 9696  
 $u$  12202  
 U 7181  
 UASB 1145  
 UCTE 9432, 10935  
 |UDI| 4618  
 Ultracapacitor (electrochemical capacitor) 3471  
 Ultracapacitor 5084  
 Ultrafine particles 245, 11292  
 Umbilical 6405  
 Uncertainty 6606  
 Uncertainty analysis 7007  
 Unconformity 11202  
 Unconventional oil and gas 7446  
 Underground Thermal Energy Storage (UTES) 4133  
 Under-pressured 4380  
 Undifferentiated 7217  
 UNICEF 8126  
 Unintended effect 10742  
 Unit commitment and economic dispatch 8980  
 Unit commitment 12254  
 Unlinked trip 1857  
 Unsaturated (saturated) fatty acids 10852



- Unsaturated/vadose zone 10141  
 UOX 7181  
 Up, down conversion 7932  
 Upconversion 9412  
 Upcycling 9027  
 Updraft combustion 1351  
 Upgraded solid biofuel 1067  
 UPS 5881  
 Uranium dioxide ( $\text{UO}_2$ ) 6688, 7194  
 Uranium 6688  
 Uranium (U) 7194  
 Uranium utilization 4050  
 Urban air quality 11263  
 Urban design plan 5786  
 Urban ecology 6853  
 Urban forest 11344  
 Urban forestry 11344  
 Urban form 169  
 Urban green space 11344  
 Urban greening 11344  
 Urban growth boundary (UGB) 5786  
 Urban heat-island effect 3450, 4674  
 Urban Mass Transportation Act 1812  
 Urban metabolism 6853  
 Urban meteorology 11263  
 Urban mining 6853  
 Urban 11292, 11325  
 Urban Redevelopment Program “Stadtumbau Ost”  
 (“Urban Redevelopment East”) 11362  
 Urban smog 11292  
 Urban sprawl 4806, 5786  
 Urban sustainability 3450  
 Urban system 5787  
 Urban wildlife 939  
 Urban woodland 11344  
 Urbanization 5786  
 UREX 7142  
 Urticaria 12019  
 US EPA 5909  
 US 1040  
 Used nuclear fuel or spent nuclear fuel (SNF) 8589  
 USTB 1145  
 $U_1$  5500  
 $u_1$  5500, 12202  
 $u_2$  5500  
 $U_2$  5501  
 $u_3$  5500  
 $U_3$  5501  
 $u_{3a}$  5500  
 $u_4$  5500  
 $U_4$  5501  
 Utility 4239  
 Utilization ratio 8081  
 UTM 6952  
 UV index 9650  
 UV Radiation 11149  
 UV (ultraviolet) radiation 11376  
 UV-A radiation 9650  
 UV-B radiation 9650  
 V 5501  
 V2B 7847  
 V2G 7847  
 Vaccine 8059  
 Vaccine resistance 6291  
 Vaccine strains 8126  
 Vadose zone 4202  
 Valence band 7882  
 Validation (model) 7007  
 Validity 3099  
 Value pricing 5021  
 VANET 11553  
 Vanpools 4945  
 Vapor pressure 10141  
 Vapor(or steam)-dominated resources 4239  
 VAPP 8126  
 Variability 6606  
 Variable generation 8980  
 Variant 5347  
 Variety 10742  
 Variography 3326  
 VAWT 3397  
 V-blender 7142  
 VCV 11159  
 VDPV 8126  
 Vector competence 5358  
 Vector 5358  
 Vehicle control systems 3052, 11187  
 Vehicle detection 11455  
 Vehicle dynamics 3052, 11187  
 Vehicle energy source 11503  
 Vehicle maintenance 1812  
 Vehicle miles traveled (VMT) 5974  
 Vehicle operations 1812  
 Vehicle performance 11481

- Vehicle resistance 11481  
 Vehicle simulations 3471  
 Vehicle tracking 11455  
 Ventilation 5856, 6865  
 Ventilation effectiveness 6865  
 Ventilation flow rate 6865  
 Verkehrsverbund or federation of transit operators 5974  
 Vernalization 1098  
 Vernalization sensitivity 2540  
 Vertical flow 4806  
 Vertical (normal) tire forces 3052, 11188  
 Very short-lived species (VSLS) 10130  
 Vestibulo-ocular reflex 46  
 VGA 6952  
 VHLW 7181  
 VHTR 4050  
 Vibrational (molecular) spectroscopy 5382  
 Viewshed 10621  
*vir* Gene 2584  
 Viral pathogens 8758  
 Viral vector 8059, 10865  
 Viremia 8126, 11985  
 Virion 4999  
 Virtual technology for aquaculture 1928  
 Virtual versus real 3201  
 Virulence 2559, 5048, 10742  
 Virus 10694, 10743  
 Viscous boundary layer 595  
 Visible, near infrared, and short-wave infrared (VIS, NIR, and SWIR) 8919  
 Visual capacity 10361  
 Visual odometry 46  
 Visual sensitivity 10361  
 Vitamin D 9650  
 Vitamin 1676  
 Vitrification 8097, 11582  
 VMT 1890, 5021  
 VO 1040  
 VOC limited 11312  
 VOC 4957, 11312  
 Void ratio 5712  
 Volatile matter 2174, 8348  
 Volatile organic compounds (VOC) 5748  
 Volatiles 11633  
 Volatility 10141  
 Volatilization 9049  
 Volcano 4163  
 Volume development 7007  
 Volunteer weed 10345  
 VOR 5021  
 VOT 5021  
 VP1 8126  
 VP2 8126  
 VP3 8126  
 VP4 8126  
 VPg 8126  
 VRLA cell 5881  
 $\nu_1$  5501  
 $V_1$  5501  
 $V_2$  5501  
 $\nu_2$  5501  
 $\nu_3$  5501  
 $V_3$  5501  
 $\nu_{3a}$  5501  
 $\nu_4$  5501  
 $V_5$  5501  
 $V_6$  5501  
 $V_d$  5501  
 $V_{max}$  5501  
 $V_{min}$  5501  
 $V_o$  12202  
 $V_{rel}$  12203  
 VTD 9432  
 Vulcanian 11614  
 Vulnerability 2929, 3621  
 Vulnerability (with respect to climate change) 4674  
**W** 12203  
 $W$  5501  
 Wafer 9197  
 Walker circulation 7245  
 Wall jet 10976  
 WAMPAC 10935  
 WAMS 12079  
 WASAZA 1145  
 Washability 2194  
 Washout 4380  
 WAsP 6585  
 Waste characterization 10000  
 Waste disposal 9979  
 Waste diversion 11673  
 Waste dumps 6665  
 Waste incineration 11839  
 Waste management 3516, 5720, 11673

- Waste 10000, 11851  
 Waste prevention (aka Source reduction) 11673  
 Waste rock 6647  
 Waste water 4202, 4415  
 Waste\* 9996  
 Waste-to-energy 9979  
 Waste-to-energy (WTE) 11682, 11708, 11768  
 Waste-to-energy (WtE) 5235  
 Wastewater effluent 11912  
 Wastewater 8689, 11874  
 Wastewater reclamation 11874  
 Wastewater reuse 11874  
 Water balance 4806  
 Water gas shift reaction 2222  
 Water gas shift reaction (WGSR) 3956  
 Water mass formation 5856  
 Water mass 5856  
 Water quality change 4806  
 Water quality objectives (WQOs) 10095  
 Water quality 2078  
 Water reclamation 11961  
 Water reuse 2078, 8689  
 Water Safety Plan (WSP) 6606  
 Water tree retardant cross-linked polyethylene (WTRXLPE) 11159  
 Water trees 11160  
 Water use efficiency 1269  
 Water use efficiency (WUE) 1098, 1477, 5619  
 Water vapor pressure ( $P_v$ ) 894  
 Waterborne disease 5048, 7384  
 Waterborne infectious diseases 11997  
 Water-dominated resource 4239  
 Water–gas shift (WGS) 5136  
 Water-leaving radiance,  $L_w(\lambda)$  8954  
 Watershed 533  
 Water-use efficiency (WUE) 2639  
 Watt 4239  
 Watt (W) 4163, 4354  
 Watt-hour (Wh) 672, 4239  
 Wave Energy 6346  
 WBT 1299  
 WC – Whole crop 1098  
 Weather modification 4104  
 Weather 623  
 Weathering 1909  
 WECC 5909, 10935  
 Weibull probability density function 6585  
 Weighting 8702  
 Well-being 6865  
 Wellhead protection area 4806  
 Well-to-pump (WTP) 10503  
 Well-to-tank (WTT) efficiency 5136  
 Well-to-wheels (WTW) 10503  
 WENE-048 predictions 6585  
 West African monsoon 5071  
 Wet cake 988  
 Wet deposition 606, 8880  
 Wet FGD 8348  
 Wet process 8715  
 Wet weight (ww) 4755  
 Wet-bulb temperature (WBT) 894  
 Wetland 11891  
 WH 6938  
 WHA 8126  
 Whey 10852  
 WHO 8126, 11069  
 WHO (World Health Organization) 5332  
 Whole systems thinking 10333  
 Whole-organism vaccine 6292  
 Wholesale electricity markets 12254  
 WID 5296  
 Wide dynamic range (WDR) 11098  
 Wildlife 8425  
 Wildtype 10743  
 Wind energy penetration 12254  
 Wind profile 6585  
 Wind shear 7426  
 Wind turbine 7394  
 Winter smog 11292  
 Winter solstice 9620  
 Wireless vehicular communication 2464  
 WOA05 7296  
 Woody fuels 9821  
 Working ion 740  
 WPV or wild poliovirus 8126  
 WRAIR 11069  
 $W_b$  5501  
 $W_f$  5501  
 $W_{gross}$  5501  
 $W_{ig}$  5501  
 $W_{in}$  5501  
 $W_{ip}$  5501  
 $W_{net}$  5501  
 WSUD 10095

WTE incinerator 4866  
WTE 5296, 5909, 8097, 11759  
WTW 1040  
WWTP 11947  
X factor 10542  
XBT (eXpendable BathyThermograph) 4909  
Xenobiotic 3657, 12294  
Xenolith 11614  
 $x_i$  7181  
X-ray 11027  
 $x_i$  5501  
Yaw angle 10590  
Yaw rate 10590  
Yeast 988  
Yellowcake 11202  
Yield gap 2720  
Yield 2194, 11376  
 $y_i$  5501  
Z-crossing 5935  
Zenith angle 9673  
Zeolite 4584

Zinc finger 2584  
Zinc finger nuclease 10815  
Zinc finger nuclease (ZFN) 10895  
Zinc finger nucleases (ZFNs) 10886  
Zinc-finger nucleases 8059  
Zircaloy 7194  
Zircar 6938  
ZLD 9758  
ZnO 1040, 1584  
Zonal 5856  
Zonal service 1857  
Zone theory of PIC formation 6976  
Zoning 5787  
Zoonosis 5048, 5358, 12019  
Zoonotic diseases 8073  
Zoonotic infection 2964  
Zoonotic pathogen 9157  
Zoonotic 2259  
Zooplankton 7007, 8201  
Zooxanthellae 2490  
Zygote 6150, 7217

# Index

## A

- abandoned mine
  - methane (AMM) 6807
  - tunnel/cavity systems 4152
- ABA, see abscisic acid
- Abaqus 6108
- abate pollution 2507
- ABC protein 12307
- abiotic elicitor 6528
- abiotic stress 1, 2712, 9065, 10748, 10751
- ablative pyrolysis 1521
- abortive poliomyelitis 8142
- AB-PBI, see poly(2,5-polybenzimidazole)
- abrasion 253
- abscisic acid (ABA) 6, 9068, 9150, 10750
  - biosynthesis 9150
  - embryonic content 9150
  - in dormancy maintenance 9150
- absolute cavity radiometer 9679
- absorbed glass mat battery 775
  - gel cell 775
- absorption 9512, 9628, 11974
  - chillers 9520–9521, 9524
  - heat pumps 4140
  - of organic micropollutants 11974
  - refrigeration cycles 4318
  - spectroscopy 6075
- absorptive air dehumidifier 9531
- absorptive glass mat 11512
- abstract community 3278
- abuse tolerance 6139
  - lithium ion cell 6139
- abyssal
  - changes 4922
  - temperature 4923, 4924
  - abyssal temperatures 4923
  - warming 5872
- Acanthamoeba* 12045, 12046
- Acanthocephalans 12031–12032, 12040
- Acari 5438
- accelerating rate calorimetry (ARC) 6108
- accelerator mass spectrometry (AMS) 8657
- accelerometer 3060, 4567, 4569, 11196
- accident 72, 3131
  - drowsiness-related 3131
  - involving children 67
  - pedestrian-related 72
- acclimation 3257
- accumulator 741, 5102
  - bladder-type 5102
- acetaldehyde 306, 835, 3610, 10641
- acetaminophen 1189, 11922
- acetate 11020
  - tritium-labeled 11020
- acetic acid 3942, 3989
- Acetobacter diazotrophicus* 1274
- acetogenesis 1149
- acetone 1466
- acetonitrile (AN) 3424, 3497, 3935, 3941, 6775
  - electrolytes 3430
- acetosyringone 2588–2589
- acetyl CoA carboxylase (ACCase) 360
- acetylation 3604
- acetylcholinesterase (AChE) 3260, 12311
  - inhibition 3260
- acid aerosol 8892
- acid base accounting (ABA) 6663
- acid catalysis 3944, 4586
- acid degradation 11445
  - products 11439
- acid deposition 175
- acid gas 4987, 5239
  - neutralization 5239
  - removal (AGR) 2236
- acid mine drainage (AMD) 6639, 6653, 6658, 6661–6663, 6673
  - bioremediation 6661
  - heavy metals 6673
  - lime-treated 6658
  - value extraction process (AMD VEP) 6662
  - water quality 6663
- acid neutralizing capacity (ANC) 175
- acid rain 171, 175, 188, 6809, 7843, 8349
  - mass balance 11749
- acid rock drainage (ARD) 6653
- acid water 2252
- acidic drainage 6663
- acidic fuel cell 3880
- acidic polymerase 2971
- acidic protogenic hydrogen 8337
- acidification 548, 1150, 1598, 8883
- acidogenesis 1149
- Acinetobacter* 1630
- acoustic Doppler current profiler (ADCP) 6761
- acoustic quality in indoor environments 10276
- acoustic signal 12279
  - Fourier analysis 12279
- acoustic thermometry 4916, 4924
- acoustic wave 12066
- acquired immunodeficiency syndrome (AIDS) 4996, 4999–5000, 5011–5012
  - definition of the problem 4999
  - global epidemic 4996
  - T-lymphotropic retrovirus (HTLV) 5000
  - treatment 5011
  - vaccine 5012
- Acrolein 2058, 2060
- acrylated epoxidized soybean oil (AESO) 6900, 6908
- acrylic acid 6917
- acrylonitrile-butadiene-styrene (ABS) 4852
- acrylonitrile 6917
- ACS study 226
- actinides 4053, 4777, 8621
  - recycling 4053
  - reprocessing 4053
- Actinidia* 1709
- actinon 8478
- action by galvanism 6500
- action spectra 9651
- activated carbon (AC) 797, 3430, 4992, 6771, 6785
  - properties 6770
  - nanoporous texture 6785
- activation neutron 8569
- activation photon 8572
- active bumper 73
- active cavity radiometer 9471
- active design guidelines 10279
- active Doppler wind lidar (DWL) 324
- active geothermal conditioning 4133
- active oxidation 1344–1345
- active pedestrian protection system (APPS) 72
- active perception 48

- active safety vehicles (ASV) 71
- active solar hot water collector 3695
- active vision 48
- active volcano 11617, 11622
- acute flaccid paralysis (AFP) 8142, 8153
- acute lymphoblastic leukemia (ALL) 3642
- acute respiratory syndrome (SARS) 10860
- acylalanine fungicides 2568
- ad hoc on-demand distance vector 11553
- AdaBoost (adaptive boosting) 83, 6960, 6968
  - algorithm 83
  - cascade 83
  - classifier 11460, 11468, 11476
  - training process 83
- adamantaneacetic acid (AAA) 7747
- adamantanecarboxylic acid (ACA) 7747
- adaptation 3365
  - systems 2931
- adaptive cruise control (ACC) 71, 76, 3068
- adaptive governance 3352–3353
- adaptive loss-of-field 12091
- adaptive management 3342, 3345, 3347, 3349–3352, 3354–3355
  - alternatives 3349
  - elucidate consequences 3350
  - identifying and evaluating tradeoffs 3351
  - implementation 3351
  - law 3354
  - objectives 3349
  - participatory active 3351
  - structured decision making 3347, 3355
- adaptive neuro-fuzzy inference system (ANFIS) 3125
- adaptive out-of-step relaying 12090
- additive genetic effect 418
- additive genetic variance 475
- additive main effects and multiplicative interaction (AMMI) model 4082
- adenine arabinoside (Ara-A) 3153
- adeno-associated virus (AAV) 10827, 10917
- adenosine diphosphate (ADP) 1479
- adenosine triphosphate (ATP) 1478–1479, 1682, 3428, 6374
- Adenoviridae* 11990
- adenovirus 8760, 8765, 11990
  - infections 11990
- adiabatic combustion process 5514
- adiabatic cooling 4738
- adiabatic steam separation 5230
- adipic acid 11830
  - synthesis 7592
  - technologies 7593
- ADMA, see automotive dynamic motion analyzer
- ADP-glucose 2709
  - pyrophosphorylase 2709
  - synthetase 2709
- adsorption 9512, 9522, 11975–11976
  - chiller 2383, 9524
  - cooling systems 9521, 9524
  - isotherm 11976
- advanced backcross QTL (AB-QTL) 2532
  - analysis 6440
- advanced breeding line 8015
- advanced burner reactor (ABR) 4060
- advanced combustion control (ACC) 6473
- advanced driver assistance systems (ADAS) 71
- advanced glazing systems or materials (AGSM) 2836, 2839
  - evaluation 2839
- advanced greedy forwarding (AGF) 11560, 11572, 11574
- advanced high-temperature reactor (AHTR) 4057
- advanced informed agreement (AIA) procedure 2305, 10769
- advanced land imager (ALI) 8943, 8949
- advanced lead–acid battery consortium (ALABC) 774
- advanced liquid metal reactor (ALMR) 4057
- advanced metering infrastructure (AMI) technology 10451
- advanced natural ventilation (ANV) 6884
- advanced oxidation process (AOP) 7607, 7609, 9563
  - non-Fenton 7609
- advanced pre-crash safety system 3114
- advanced public transportation systems (APTS) 91–92, 95, 99
  - control strategies 99
  - measures of effectiveness (MOE) 95
  - simulation-based modeling 92
- advanced spectroscopic portal monitor (ASP) 7213
- advanced thermal system (ATS) 2355
- advanced traffic management system (ATMS) 96
- advanced traveler information system (ATIS) 96
- advanced water treatment plant (AWTPs) 2090
- advection-dispersion-reaction (ADR) mass transport equations 4099
- Aedes* mosquito 12014
- AEM, see alkaline (anion) exchange membrane
- aeolian soil 2432
- aeration 11670, 11938
  - of activated sludge systems 11938
- aerial feeders 3012
- aerial photography of ice 282
- aerobic bacteria 3845
- aerobic batch experiments 11979
- aerobic bioremediation 10151–10152
- aerobic oxidation 10174
  - of alcohols 10174
- aerobic oxygen concentration 1934
- AEROCOM model 137
- aeroderivative gas turbine 6831, 6833, 6847
- aerodynamic 12213
  - diameter 11302, 11320
  - efficiency 12137
  - flow 12291
  - load 12205, 12208–12209, 12211
    - dynamic inflow 12209
    - dynamic wake 12209
    - engineering models 12208
  - power conversion 12137
  - roughness length 11267, 11269
- aerodyne aerosol mass spectrometer 122
- aerofoil 4486
- Aeromonas* 5055–5056, 5064
  - hydrophila 5056
- aerosol 111–114, 117, 119–120, 123–124, 127, 130–132, 135, 139, 141, 171, 316, 610, 623, 630, 1254, 1316, 1335, 1338, 2108, 2116, 4108, 8961, 10623, 11153, 11314
  - accumulation mode 127
  - aerosol–climate interactions 141, 6747
  - aerosol–cloud interaction 119, 6756
  - aerosol–cloud–precipitation interactions 139
  - air pollution 141
  - atmospheric correction 8961
  - backscattering ratio 316
  - backscatter 127
  - climatology 9636
  - cloud droplet activation 132
  - emissions 2100
  - formation 113
  - global budgets 124
  - global burdens 124
  - homogeneous nucleation 117
  - hygroscopicity 132
  - in climate models 630
  - in the atmosphere 11153
  - information 9644
  - iron supply 7269
  - layer 135
  - mass distribution function 135
  - mass spectrometry 122
  - model 9723

- optical depth (AOD) 135, 196, 9635, 9735, 11155
  - global distribution 135
- particle 113
- pollutants 8887
- population 112
- radiative effect 2108
- reflectance 8961
- size distribution 114, 127
- stratospheric 130, 4108, 10119
- submicron-sized 120
- sulfate 119
- vertical distribution 127
- water uptake 131
- aerostat 5082
- AESO-styrene
  - copolymers 6922
  - polymers 6919
    - viscoelastic and mechanical properties 6919
- afforestation 2117, 5823
- aflatoxin 3596
  - B1 (AFB1) 3643
- AFLP, see amplified fragment length polymorphism
- African easterly jet (AEJ) 5072
- African easterly wave, (AEW) 5072
- African horse sickness (AHS) 5361
- African monsoon 5074
  - multidisciplinary analysis (AMMA) program 5072
- afterburner 6976
- Agency for Toxic Substances (ATSDR) 2010
- agglomeration 1068
- aggregate breeding value 424, 2786
- Agreement on Agriculture (AoA) 1021
- agribiotechnology 4511
- agribusiness 2746, 4362
  - geothermal energy 4362
- agriculture/agricultural 430, 577–578, 1446, 1534, 1537, 1567, 1573, 2324, 2329, 2529, 2687, 2742, 2744–2746, 3635, 4496, 4515, 5429, 5431, 5438, 6361, 7675, 7677, 9145, 10366, 10713, 10724, 10745
  - benefits 2746
  - biotechnology 4504, 4528, 10745
  - by-products 1567
  - collectivization 10366
  - contaminants 7675
  - cultivation 1490
  - dormancy 9145
  - economics 1549
  - ecosystems 5429
  - entomology 5438
  - environmental impacts 2745
  - evapotranspiration 1544
  - food chain 3525
    - countermeasure 3525
    - remedial actions 3525
  - genetic engineering 4515
  - genetic improvement 430
  - impact on biodiversity 10724
  - innovation 4496
  - inputs 1565
  - insect pests 5429, 5431
  - intensification 10371
  - irrigation 2687, 11878
    - water quality 11878
  - land 1508, 1775, 3707
    - accelerated erosion 3707
    - energy crop production 1508
    - in South Africa 1775
  - land use 5828
    - nitrogen loads 5828
    - planning 9327
  - landscapes 945
  - management 1564
    - improvement 1564
  - maximum residue limit (MRL) regulation 6361
  - nutrients 2746
  - pesticide 300
  - pesticide-based 3635
  - plants 5608
    - radiation-induced effects 5608
  - pollutants 7677
  - population 9360
    - genetic improvement 9360
  - practices 2741, 2748
    - fallow 2748
    - footprint 2744
    - monoculture 2748
    - tillage 2748
  - production 150, 1133, 9316–9317
    - agro-technical possibilities 9317
    - decision making 9317
    - socio-economic conditions 9317
    - sustainability 1133
    - system 152
  - productivity 5429
  - rationalization 1534
  - reclaimed water use 2329
  - reduced-till 10745
  - research 1766, 2757, 4515
  - residues 1292, 1537, 1573
  - science 577, 2529, 2746, 2753
  - soils 161, 7667
    - nutrient transfer 7667
    - pathogen transfer 7667
  - street landfill 2012, 2014
  - sustainability 2529, 2742, 5438
  - systems 7671, 7673, 7676
    - contaminants 7676
    - dangerous microorganisms 7671
    - fecal microorganism 7673
    - nutrient sources 7673
    - nutrients 7671
    - wastes 6806, 10004, 10007
      - characterization 10007
      - generation 10007
      - water usage 2324
- agriculturalists 2932
- agrifood systems analysis 3209
- agro forestry 1579
- Agrobacterium* 2589, 2594, 2601, 2606, 6523, 8044
  - *Agrobacterium*-mediated transformation 2588
  - *Agrobacterium tumefaciens* 8060, 10672
- agro-biodiversity 1542–1543
- agro-biotechnology 2293
- agrochemicals 10695
- agroecology 150, 566, 2688
- agroecosystem 150–151, 153, 162, 2553, 2687, 2742, 2746, 2752, 5429, 5431, 9317
  - sequestration of CO<sub>2</sub> 162
  - strategic management 9317
  - sustainability 151
  - time-specific management 2752
- agro-food biotechnology 10766–10767
- agroforestry 151, 1564, 1571
- agrofuel 1381
- agro-industrial wastewater pretreatment 1172
- agro-infection 8077
- agro-infiltration 8077
- agronomic interactions with CO<sub>2</sub>
  - sequestration 161
- agronomic technique 2728, 2731, 2734
  - yield-positive 2734
- agronomic trait 10748
- agronomy 2734
- agrosystem 5448
- agro-technology system 1122
- Agulhas leakage 8661
- ahermatypic colonial scleractinian 6413
- air bleed 8221
- air chemistry 11323
- air circulation 912
- air collector 9488
- air conditioning 3677, 4737, 4745, 10269
- air contaminant 7714
  - mitigation 7714
- air core reactor 9345
- air dehumidification 9532
- air density difference 9791

- air drilling 4383, 4428
  - noise reduction 4428
- air flow 11263, 11264, 11266–11267, 11279, 11281
  - characteristic regions 11263
  - in urban areas 11274–11275
    - computational models 11274
    - mesoscale models 11275
  - isolated street canyons 11281
  - mesoscale 11266
  - modelling calculations 11279
  - neighborhood scale 11267
  - wind tunnel experiments 11279
  - windows 3692
- air gap membrane distillation 2920
- air leakage 896
- air molecules 11152
- air movement in rooms 6873
- air poisoning 7530
- air pollution 112, 141, 167, 169–170, 172, 175–177, 179, 181–182, 185–188, 190, 192–195, 203–205, 207–209, 224, 245, 247–248, 261, 272, 298, 307, 1010, 1506, 2030, 3640–3641, 4012, 4111, 7852, 8880–8882, 8889, 8891, 9737, 10482, 10585, 11292–11293, 11300, 11313, 11347
  - acid deposition 175
  - acidification 179
  - adverse effects 224
  - air pollutant 170, 204, 224, 3648, 8349, 8895, 11312
    - childhood cancer 3648
    - coal combustion 8349
    - health effects 224
  - aircraft 209
  - best available technology (BAT) 185
  - climate change 177, 179, 194
  - combustion of hydrocarbons 209
  - control (APC) 9986
    - devices (APCDs) 4881, 10584, 10585
    - residues 4867, 4868, 11597, 11742, 11752
    - system (APCS) 272, 4012, 4958, 4992, 5910, 5911, 11738, 11752, 11788
    - technology 11696
  - designing urban areas 192
  - economic damages 179
  - ecosystem effects 8891
  - electricity 208
  - exacerbation of asthma 3641
  - from transport 261
  - global problems 177
  - health effects 172, 205, 8891
  - healthcare costs 176
  - history 11313
  - hot spots 11300
  - impacts on ecosystems 176
  - institutional changes 195
  - legislation 8881
  - management 199
  - mass transfer 2030
  - mitigation 188, 190
  - monitoring 167, 169, 177, 180, 185, 189, 192, 196–198, 8889
    - benefits 177
    - computer modeling 197
    - design methodologies 197
    - oversimplifications 198
    - satellite observations 196
    - sustainability 189
  - no-effect threshold 204
  - optimally cost-effective solutions 187
  - ozone depletion 179
  - particulate matter 204
  - pathways 248
  - policy 185
  - policy-making 186
  - precipitation chemistry monitoring 181
  - problems 9655
  - public involvement 194
  - regional problems 175
  - satellite remote sensing 182
  - science 194
  - socioeconomic distribution 193
  - sugarcane ethanol production 1010
  - surface transport 245
  - sustainability 167
  - transportation-based 7852
  - transport-related 247
  - visibility problems 176
- air quality (AQ) 112, 141, 180, 182–183, 186, 204–205, 207, 209, 211, 213, 224, 234, 239, 244, 261–262, 271, 299, 310, 630, 943, 8880, 8882, 8889–8891, 8894–8897, 11292, 11294–11295, 11299–11301, 11303–11304, 11314, 11347
  - air treatment 271
  - city air 943
  - climate change 8897
  - computer modeling 182
  - decision-making for policy 8894
  - gaseous pollutants 8882
  - guidelines and standards 204–205, 8895
  - health effects 11295
  - impacts 211
    - of geography 11299
    - of meteorology 11299
    - of particle pollution 11301
    - of topography 11299
  - improvement 11347
  - index (AQI) 11292, 11296
  - legislation 262, 8895
  - management (AQM) 209, 261, 11293
    - management policy 205
  - measurement 8889, 11304
    - locations 11303
  - metrics 11321
  - models 261
  - monitoring 8890, 11314
    - stations 180
  - no-effect threshold 205
  - numerical modeling 183
  - origins 11294
  - planting of vegetation 271
  - pollutants 8882
  - pollution haven 186
  - regional context 8896
  - regulations 2185
  - regulators 239
  - satellite observation 182
  - standards and guidelines 224, 234, 8895
  - surface transportation 244
  - US legal framework 213
  - warnings 178
  - WHO process 224
- air ratio 2166
- air receiver 2365
- air sparging 2449, 10148, 10152
- air temperature 10391, 10392
- air toxic 298, 299–302, 306
  - carcinogens 299
  - health effects 301, 306
  - maximum achievable control technology 301
  - mobile sources 302
  - pathways 300
  - sampling 302
  - source categories 299
  - toxic cycle 302
- air traffic 652–654, 658, 663
  - carbon dioxide emissions 658
  - changes of air chemistry 663
  - control 2470
  - emissions 654
  - influence on climate 653
  - Kyoto Protocol 658
  - lighting system 4994
  - transport system 658
- air treatment 271
- air-blown autothermal reforming 3967
- air-blown gasifiers 1434
- airborne
  - brake particle 253
  - contaminants 5334



- dust particle 115, 10581
- material 208
- microorganisms 11389–11390
- ozone 313
  - DIAL 313
- photo-reconnaissance 282
- radar 284
- radioactivity 8583
- radionuclides 8455
- remote sensing 8922
- sensors 8923
- toxic chemicals 298
- water vapor 317
  - DIAL 317
- air-conditioning 2814, 4690, 9509, 9529
  - desiccants 9529
- air-cooled condenser 4981
- aircraft 209, 309–310, 313, 652, 665
  - atmospheric research 313
  - differential absorption lidar (DIAL) 310
  - emission standards 665
  - radiation environment 8473
  - reactor experiment (ARE) 4058
  - sensors 8929
- air-electrode batteries 3495
- air-heating solar collector 9466, 9467
- airline emission index 665
- airline–HST cooperation 4940
- airport 11298
- air–sea
  - heat transfers 4921
  - interaction 7254
  - interface 2512, 7268
- airtight construction 7635
- air-to-liquid sample collectors 1651
- air–water
  - gas exchange 595, 604
  - gas transfer 597, 602
  - oxygen transfer 10958
- airy waves 7402
- Aitken mode 114
- ALARA principle 4906
- Alaska gas hydrate research 330
- albedo control 9701
- albendazole 12030
- Albizia* 1290
- alcohol/alcoholic 1028, 3610, 3912, 10641
  - abuse 3590
  - alcohol/diesel blends 5493
  - as SOFC fuels 3912
  - carcinogenic mechanisms 3610
  - consumption 10637, 10641, 10654
  - fermentation 1046, 1222–1223
  - fuel 5468, 5477, 5479
  - route 11451
  - use 3598
- alcoholism 10642
- alcoholysis reaction 927
- aldehyde 300, 2242
- Alexandrium* 4821–4824, 6762
  - description 4821
  - detection 4823
  - economics 4822
  - mouse bioassay 4823
  - nutrient interactions 4824
  - origins 4824
  - toxicity 4821
- algae/algal 346–352, 359–365, 523, 534, 1925, 2084, 2494, 4820, 11439
  - algal–coral atolls 2490
  - as human/animal food source 347
  - biomass 361
    - productivity 350
  - biotechnology 352
  - blooms 2086, 2322, 4820, 4835, 7388
  - chloroplast transformation 365
  - cultivation 348
  - domestication 351
  - fertilization 349
  - for biofuel production 348, 364
  - large-scale cultivation 364
  - life cycle 349
  - lipid metabolism 360
  - mass culture 363
  - molecular farming 362
  - natural biodiversity 351
  - nuclear genetic transformation 365
  - phenotypes 347
  - photosynthesis 2494
  - production 6359
  - refinery 361
  - triacylglycerols 359
- alien gene 4497
- aliphatic radical polymers 7550
- alkaline 372–374, 378–379, 969, 1318
  - anion-exchange membranes (AEMs) 372, 374–377, 379–382, 8260
    - as potential electrolytes in fuel cells 381
  - ion-exchange capacity (IEC) 377
  - metal-cation-containing 377, 381
  - patents 382
  - polysulfone-based 380
  - polysulfone 379, 380
  - properties 375
  - pyridinium- or phosphonium-based 376
- QA-containing radiation-grafted 375
- research challenges 382
- synthetic routes 377
- earths 2948
- electrolytes 8269
  - membrane 373
- fuel cell (AFC) 373, 3388, 3851, 3867, 3880, 3884, 8233
- ionomer 373, 374, 378–379
- membrane fuel cells (AMFCs) 372, 379, 382
  - research challenges 382
  - with H<sub>2</sub> as fuel 379
- metal chlorides 1345
- phosphatase 4019
- polymer electrolyte membranes 8216
- solution 7738
- transesterification 929
- zinc–air battery 748
- alkalinity 120
- alkali 1668
  - alkali–silica reaction (ASR) 2405, 2409
- alkaloid 6522
- alkane 10663
  - thiols 1648
- Alkene 10663
- alkylate 7835
- alkylation 7837
- alkylphenol chemicals 11965
- all-black detector thermal offset 9682
- all-bus system 1885
- allelochemical 2749, 10350, 12294
- alleviating poverty 2737
- allocation procedure 934
- allochthonous pathogen 5059, 8760
- allometry 8436
- allothermal gasification 1429
- alloy system 9300
  - high-energy mechanical milling (HEMM) 9300
- allozyme 3363
  - diversity 3363
- alluvial soil 2432
- allyltoluidine 7595
- AlNiCo alloys 25
- alpha amylase 991
- alpha decay 8564
- alpha radiation 5575, 5579, 8464
- alpha-neutron sources 8569
- alternating current (AC)
  - electricity 2977
  - generator 6815
  - power 7309

- alternative energy sources 8174
- alternative fuel 268, 921, 5463–5464, 5466, 5488, 5495, 5542
- classification 5463
  - for compression-ignition (CI) engines 5488
  - ignition characteristics 5542
  - legislation 5463
  - market share 5464
  - on engine performance 5463
  - properties 5466
  - technical implications 5463
  - well-to-wheel analysis 5495
- alternative oxidase (AOX) 5
- alternative water source 8691
- altimeter radar sensors 8931
- alumina 2249
- catalyst 3965
- aluminol 8604, 8614
- aluminophosphate 7593
- aluminosilicate 8606
- clays 7812
- aluminum 715, 2405, 7195, 8778, 8815
- automotive scraps 8815
  - chloride 4606
  - recycling 8778
  - tolerance 2713
- Alzheimer's disease 3155
- amaranth 1694, 2640
- Amax 2631
- ambient temperature lithium battery 11518
- ambient urban air pollutant emission 11316
- ameliorating soil 2408
- American monsoon system (AMS) 7256
- American National Standards Institute (ANSI) 3007
- americium 8388, 8391–8392, 8582, 8620–8621, 8667
- americium-241 3761
  - oxidation states 8392
  - speciation 8391
- AMFC, see alkaline membrane fuel cell
- amikacin 11140
- amines 2152, 4652
- selective transformation 4652
- amino acid 836, 839, 1681–1682, 1694, 10842, 11409
- mycosporine-like 11409
  - sulfur-containing 839
- $\beta$ -aminobutyric acid (BABA) 2574
- $\delta$ -aminolaevulinic acid dehydratase 10651
- aminopeptidase N 4017, 4019
- ammonia 118, 127, 268, 382, 610, 1136, 1334, 3770, 3773, 3777, 3782, 3989–3990, 7314, 8367, 10638, 10653
- ammonia-containing gas 4986
  - emissions 1136
  - fiber explosion (AFEX) 969
  - general process description 3990
  - Haber-Bosch process 3770
  - reaction pathway 3990
  - synthesis 3990–3992
    - catalysis 3991
    - commercial activities 3992
    - reactors 3991
    - volatilization 3773, 3777, 11894
- ammonium 850, 1103, 3772, 3781, 7673
- ammonium-oxalate (AO) 8606
  - phosphates 3772
- amnesic shellfish poisoning (ASP) 9085
- Amoebozoa* 12049
- amorphous hydrogenated silicon 9256
- materials 9254–9256, 9259–9260
    - doped material properties 9259
    - light-induced degradation 9260
    - optoelectronic properties 9256
    - semiconductor properties 9254
    - undoped 9255
  - microstructure 9256
  - thin film 9261
    - photoconductivity 9261
- amorphous silicon 9221, 9296, 9436
- photovoltaic devices 9247
- amorphous solar cell 7955
- amphibians 9165, 10089
- as sentinels 9165
- amphiphilic molecule 7567
- amphitropical distribution 2492
- amplified fragment length polymorphism (AFLP) 5390, 6696
- AMULETT 74
- amylase
- inhibitors 4031–4032
  - promoters 2596
- amylopectin 989, 4555
- amylose 4555
- anaerobic baffled reactor (ABR) 1153
- anaerobic digestion 978, 980, 1089, 1098, 1105, 1130, 1134, 1149, 1174, 1224–1225, 1612–1613, 1619, 2417
- anaerobic digester gas (ADG) 7867
  - conversion processes 1098
  - digester gas (ADG) 7867
  - of excrements 1134
  - raw material 1105
- anaerobic fermentation 1050, 1140, 1174, 1177, 1179
- anaerobic filter 1153
- anaerobic microorganism 11901
- Anagros epos* 156
- Anatoxin-a 4832, 4834
- anchor marker 6432
- anchovies 3577–3578
- Anderson-Schultz-Flory (ASF) distribution 2242
- andesitic water 5228
- anellovirus 8131
- aneuploidy 3603, 3606
- angiotensin II 1188
- angular-rate sensor 56
- anhydrosugar 965
- aniline 7595
- animal 392, 406, 413, 431, 440, 445, 446, 453, 455, 458, 473, 485, 490, 495, 823, 949, 8002–8003, 9123, 11398
- additive genetic effects 455, 458
  - agriculture 1783
  - aquaculture 9123
  - base population 440
  - biodiversity 150, 1749
  - biomass 823
  - biotechnology 10865, 10870
    - ethical limits 10865
  - breeding 386, 388–389, 391, 393–399, 405, 407–410, 413, 415–416, 420, 426, 428, 436–438, 441, 457, 473–474, 1778, 1796, 1807, 2787, 2964, 7973, 7990, 7996, 7998, 8000, 8308, 9358–9359, 9362–9368, 9370–9371, 9373–9381, 9383–9387, 9389, 10814
    - accounting for variation in group size 9385
    - additive genetic variance 9363
    - artificial insemination 389
    - artificial selection 9389
    - associative common-litter effects 9386
    - associative heritability 9381
    - associative-effect models 9389
    - Bayesian techniques 391, 398, 436
    - behavioral traits 9373
    - best linear unbiased prediction (BLUP) 391, 436, 474, 9375–9377
    - biometrical methods of selection 8308
    - breeding schemes 9359
    - categorical data 457
    - data recording 7990
    - degree of dilution 9386
    - deoxyribonucleic acid (DNA)-level diagnostic procedures 8308

- developing countries 388
- dominance 416
- economic indexes 457
- epistasis 416
- estimation of genetic parameters 9380
- expected progeny differences (EPD) 428
- foundations 415
- frozen semen 389
- genetic drift 409
- genetic improvement 410, 9359
- genetic progress 1807
- genetic trends 441
- genetic variance 393, 9370
- genetics 386, 389
- genome-wide selection 2787
- genomics 2787
- Griffing's associative effects 9377, 9383
- group heritability 9370
- group selection 8000, 9368, 9370, 9380
- hard-to-measure traits 7998
- heritable competition 9365
- heritable effects 9363
- heritable variance 9364
- identifiability of the associative genetic variance 9387
- individual selection 9368
- industry 495
- infinitesimal model 398, 437, 474
- linear statistical model 438
- long-term challenges 405
- major genes 474
- marker-assisted selection 2964
- mass selection 9368
- maternal genetic effects 9383
- maternally affected traits 9378
- mating 416
- methods of estimation 441
- methods 389, 395
- mixed model equations (MME) 398, 441
- mixed models 398
- modeling 436
- molecular genetics 399
- Monte Carlo Markov chains 391
- multilevel selection 9371
- multiple traits 9359
- neuroendocrinology 7996
- non-genetic associative effects 9384, 9386
- non-heritable genetic effects 9363
- nucleus-multiplier scheme 396
- objective 409
- optimum designs 9387
- optimum index selection 9371
- phenotype 9371
- phenotype-driven 2964
- phenotypic value 9374
- polymorphic markers 8308
- predicted transmitting abilities (PTA) 428
- prediction accuracy 420
- prediction reliability 420
- pseudo-BLUP selection index 9378
- quantitative genetics 415, 9362
- quantitative trait loci (QTLs) 2964
- quantomics approach 7998
- random effects 426
- reliabilities 441
- reproductive technology 7990
- residual or restricted maximum likelihood (REML) 391
- response to selection 9366–9367
- schemes 407
- selection criterion 9367
- selection 408–409, 416
- single record per animal 441
- social behavior traits 8000
- social interactions 9374
- social model 9363
- social selection experiments 9379
- socially affected traits 9358, 9383
- square root of heritability 9374
- stakeholders 408
- standard errors (SE) of estimated parameters 9387
- statistical methods 397, 9380
- statistical power 9387
- sustainability 389, 391, 407, 413, 7973
- sustainable systems 394
- technology 1778, 7983
- theoretical developments 416
- traditional BLUP model 9376
- traits 436
- transgenesis 399
- domestication 152, 207
- genetic resources 1762, 1771, 7975
  - for food and agriculture (AnGR) 406
- genetic value 473
- genotyped 431, 485, 490
- hybrids 392
- identification 2783
- improved feeding and management 406
- integrity 10879
- manure 1147, 1152
- missing parents 440
- models (AM) 428–430, 437, 439, 444, 446, 448–450, 454–455, 459–461, 1796, 3264
  - assumptions 439
  - binomial traits 459
  - count data 461
  - culling 455
  - extensions and variations 429
  - genetic relationships 439
  - heterogeneous variances 461
  - hierarchical models 461
  - inbreeding coefficients 439
  - infinitely dimensional trait 448
  - international comparisons 461
  - Legendre polynomials 449, 450
  - limitations 439
  - low heritability traits 455
  - maternal effects 446
  - model comparisons 461
  - models for survival data 459
  - multiple trait models 454–455
  - plotting curves 454
  - proportional hazard model (PHM) 460
  - random regression models 448, 449, 450, 454
  - reduced animal model 430
  - regression functions 449
  - repeated records 444
  - robust estimation 461
  - scaling time variables 449
  - sire model 430
  - survival analyses 460
  - threshold model 459
  - traits 455
  - Weibull baseline hazard function 460
- molecular genetics 473
- most probable producing ability 446
- pedigree 440
- permanent environmental effects 446
- pests 5431
- production 406, 473, 494, 1741, 1759, 1761, 7991, 10840
  - genomic selection 1761
  - heat stress 1759
  - infinitesimal model 494
  - intensification 7991
  - water requirements 1759
- product 1744, 8001
- purchasing 413
- pure lines 392
- ranking 453

- records 1778
  - analysis 1778
  - data capturing 1778
  - dissemination 1778
- repeated records 445
- residual error effect 458
- resources 1746
  - management 1768
- welfare 413, 1785, 7990, 8003, 10814, 10877–10878
  - problems 8002
- anion
  - exchange capacity (AEC) 8610
  - mobility 6053
- anionomer 373, 374
- anisakiasis 12032, 12034, 12050
- anisakidosis 12032
- Anisakis* 12032, 12034, 12051, 12053
  - *simplex* 12050, 12052
- Annelida* 12047
- anode 740, 752, 3873, 6068–6069, 6091, 6105, 6116, 6127–6128, 6142, 6737, 9907
  - anode–electrolyte interface 6042
  - deposition of nickel 6105
  - hydrogen oxidation reaction 7731
  - materials 6091, 6116
  - overpotential 6737
  - silicon-based 6142
  - tail gas 5170
  - with Li<sup>+</sup>-ion liquid electrolytes 752
- anolyte 749
- anomaly initialization 2129
- Anopheles* mosquito 6293, 6295
- anopheline
  - mosquito 11072
  - vectors 11078
- anorthite 11603
- anorthosites 1910
- ANOVA model, 4080, 4083
  - reference 4083
- anoxic limestone drain 6661
- anoxic methane oxidizer 6411
- anoxic water 7347
- antagonistic microorganism 2570
- Antarctica/Antarctic 287
  - AVHRR mosaic 287
  - bottom water (AABW) 5860, 5871–5872, 8677
  - ice mass loss 4576
  - intermediate water (AAIW) 8677
  - ozone hole 10132, 10135
  - peninsula 282
  - radar image mosaic 287
- antenna protein 355
- Anthozoa* 2495
- anthracite 2178
- anthracnose 1277
- anthranilate 1695
- anthrax 5361, 5369
- anthropocene 579, 607, 614, 2095, 7230, 7270
- anthropogenic
  - air pollution 9737
  - carbon dioxide 7268
  - climate change 2115, 2119, 10118
  - emissions 10296
  - greenhouse gases 10118
  - metals 7350
  - anthropogenic micropollutants 11912, 11922
  - particulate matter 8887
  - radioactive material 8498, 8514
  - radioactivity 8488
    - monitoring 8670
  - radionuclides 8409, 8527, 8656, 8658, 8666, 8673, 8681
    - Atlantic ocean 8666
    - in the marine environment 8658
    - Indian ocean 8666
    - wastewater contaminants 11930
- anthroposphere 3450, 10578
- anti-air pollution action plans 1396
- antibiosis 499, 5442
- antibiotic 497
  - emerging pathogens 497
  - molecules 500
  - resistance 499
- antibody
  - plant-based production 8074
  - receptor molecules 1649
- antibody-based diagnostics 5384
- anti-brake system (ABS) 3861
- anticancer gene 3607
- anticarcinogen 3613
- antifreeze protein genes 10798
- anti-infective agent 3164
- anti-lock brake system (ABS) 76, 3053, 8852, 11188, 11497, 11500
- antimalarial(s) 11084
  - activity 11082
  - drug 6292, 11080
- antimicrobial peptide (AMP) 2965
- antimicrobial protein 10854
- anti-mycobacterial antibiotics 11141
- antioxidant 578, 3589, 3660, 3662, 3667
- antiparallel thyristors 12150
- antiparasitic agent 3164
  - from marine sources 3164
- antireflective coating (ARC) 9216
- antiretroviral therapy (ART) 4999, 11137
  - drugs 5010
- antithrombin 640
- anti-tuberculosis
  - drugs 11136, 11141
  - therapy 11131
- antitumor agent 3153, 3156, 3160
  - in clinical trials 3160
- antitumor compound 3153
  - marine-sourced 3153
- antiviral agent 3164
  - from marine sources 3164
- Apatite 3895
- Aphis maidis* 1275
- aplidine 3160
- Aplidium albicans* 3160
- aplysia toxin 4832
- apoptosis 3628
- apostatic selection 10076
- apparent competition 10065
- aquaculture 511–512, 514, 527, 533–536, 538–540, 542–544, 546, 555–557, 559, 561, 564, 566–568, 570, 572–574, 576–577, 581–582, 1769, 1927–1928, 1930, 1932, 1941, 1944, 1948, 1950, 1952–1953, 1955, 1960, 1969, 1971, 3320, 3557, 3560, 3574, 5894, 5897, 5899, 5902–5906, 6182–6183, 6354, 6356–6357, 6361–6362, 6759, 6767, 7263–7264, 7267, 8201–8202, 9175, 9183, 9187, 9390, 10318, 10798
  - agency 572
  - alternative farming methods 5899
  - aquaculture-derived food products 9180
    - food safety 9180
  - Aquapod systems 581
  - biomass 543
  - carrying capacity 1928, 1948
  - certification schemes 9183
  - communities 534
  - competition for feed 9390
  - culture of shellfish 9175
  - development 555, 561, 573, 5894
  - disease 1932
    - modeling 1953
  - diversification 546
  - ecological 533
  - ecosystem 533, 535, 568, 7264
    - approach 1950
  - effects on biodiversity 6183
  - effects on fisheries 6183
  - environment 5894
    - concerns 3560
    - impacts 8202
    - management 5906
  - European 527
  - FAO ecological approach 535

- farming technologies 5894
- farm 536, 543, 556
- feed conversion ratio (FCR) 5899
- feeds 3574
- for the poor 577
- improved governance 572
- in the Mediterranean 6354
- industrial 538
- industry 1952
- integrated multi-trophic (IMTA) 542
- life cycle assessment (LCA) 5893, 5897–5899, 5902
  - allocation 5897
  - impact assessment 5898
  - impact categories 5898
  - in food production 5898
  - system boundaries 5897
- macroeconomic factors 7264
- management 555, 570, 1971
- maximum residue limit (MRL) regulation 6361
- monoculture 544
- nearshore 559, 582
- nutrient extractive 557
- offshore 514
- open ocean 514
- polyculture 7264
- pond heating 4365
- production 5893, 6182, 6362, 9174, 10318
  - of finfish and shellfish 9174
  - of mussels 6759, 6767
  - systems 572
- public perception 6357
- real-time applications 1955
- reduction of variability 9390
- regulations 1969
- research models 1941
- resilience capacity 535
- restoration of ecosystems 576
- rich internet applications (RIA) 1955
- scale 536
- science 577
- screening models 1941
- service industries 540
- social acceptance 1944, 6357
- social ecology 538, 573
- social equity 6356
- solar energy inputs 5903
- stewardship council 9183
- sustainability 564, 566–567, 574, 1930, 7267, 9187
  - tools 5894
- toolbox 7263
- transmission of disease and parasites 5904
- triple bottom line 539
- true carbon emissions 5906
- virtual tools 1952
- wastewater 5897
- water quality 5905
- aquafeeds 5899
- aquaplanet 624
- Aquapod™ 582–586, 588, 592, 593, 3580
  - artisanal fish farming 592, 593
  - bolt tests 586
  - cage system 7265
  - compression tests 586
  - containment 583
  - cost 584
  - engineering 584
  - experience 588
  - installations 588
  - mooring 584
  - net pens 586
  - structural exoskeleton 583
  - submersibility 582
  - technology 584
  - waste management 584
  - wire mesh 585
- aquaponic 544, 548, 8202
- aquasol 9135
- aquatic
  - animal code 1946
  - ecosystems 537, 573, 576, 2340, 3526, 3533, 5603, 5674, 10958, 11254, 11892
    - contaminated sediments 3526
    - countermeasures 3526
    - radiosensitivity 5603
    - remedial actions 3526
    - remediation strategy 3533
    - restoring 576
    - sediment-associated contaminants 11254
  - environment 6189, 9143, 11912, 11965
    - antibiotics 6189
    - interface compartment (IC) concept 9143
    - micropollutants
    - occurrence of endocrine disrupting compounds 11965
  - farming ecosystems 533
  - food 513, 7264, 7267, 8408, 10331
    - radioactivity 8408
    - sustainability 10331
  - habitats degradation 3706
  - invasive species 6184, 6363
- landscape 6190
  - climate change 6190
- organisms 2260, 11233–11234
  - adsorption of radionuclides 11234
- plankton 11408
  - UV sensitivity 11408
- products 1951, 9175
- radioecology 7008, 7030
- systems 1938, 1940, 1953, 5674, 7009, 8962, 10051–10052
  - optical classification 8962
  - pathogens 1953
  - speciation 10051
  - sustainability 5674
  - toxicity of metals 10052
  - uptake of radionuclides 7009
- aqueous batteries 8746
  - separator 8746
- aqueous complexation 4777
- aqueous environment 7386
- aqueous potassium hydroxide 780
- aquifer 342, 4785, 4798, 4815
  - contamination 4798
  - geothermal system with surface discharge 4153
  - mineralogy 4127
  - pumping tests 4815
  - remediating polluted 4785
  - remediation 4803
  - store 10556
  - tests 4816
  - thermal energy storage (ATES) 4133, 4152, 4154
- Arabidopsis* 3, 6, 8, 1695, 1697, 1707–1708, 1714–1715, 2553, 2591, 2690, 4035–4036, 4038, 5324–5325, 6432, 6528, 9071–9072, 10676, 10679, 10682, 10687, 10698, 10750
  - genome 10679
  - genome program 4035
  - ribulose biphosphate carboxylase (RuBisCO) 4038
  - salinity tolerance 5325
  - salt stress 5325
  - *thaliana* 2550, 2626, 9146, 10671, 10673
  - transformants 10682
- arabinose fermentation 974
- arabinoxylanases 10845
- arable land biotic community constraints 155
- arachidonic acid (ARA) 1697
- Arachnida* 5438
- aragonite 7236
- arboriculture 11355
- arbuscular mycorrhiza 155
  - fungi (AMF) 3779

- arc volcano 11639
- archaeological landscape 10378
- Archiacanthocephala* 12040
- architecture 3677, 10196, 10300
  - of indigenous cultures 10300
  - unplugged 3677
- Arctic
  - food chains 8459
  - ice dynamics joint experiment (AIDJEX) 2763
  - ice loss 9702
  - lichens 8454
  - monitoring and assessment programme (AMAP) 8457
  - oscillation (AO) 2137, 2513, 10124
  - polar vortex 10133
  - sea ice 282, 2521
  - warming 3219
- arenesulfonylation 4598
- Arenicola maritima* 1921
- Arge process 2244
- Argentine biosafety system 2289
- ARGO float 2524, 4915, 4924
- argon 5226
- arid ecosystem 2930
- aromatic hydrocarbon
  - degradation 1634
  - ionomers 6562
- Arrhenius
  - behavior 6083
  - equation 3899
  - expression 1518
  - function 9053
  - temperature 2025
- arsenic 172, 3647, 4887, 10638
- arsenobetaine 7356
- ARTEMIS project 258
- artemisinin 11080, 11084
- Arteria thaliana* 359
- arterial median busway 1819
- artesian 11080
- Arthrobacter* 8028
- Arthropod 5457
  - identification 5457
- artificial
  - chromosome 2585, 2607
  - insemination (AI) 391, 397, 421, 433, 466, 1724, 1737, 2782, 2785, 9367, 10868
  - lagoons 10616
  - lighting 2808, 2827, 2831, 10392
  - artificial neural network (ANN) 2911, 3116, 3123, 12095
  - photosynthesis 5174, 7611
  - radioactivity 8389
  - radionuclide 8452
    - in the environment of caribou/reindeer 8452
  - selection 416
  - sky 2820
    - mirror box design 2820
- artisanal fishery 592
- aryl hydrocarbon receptor (Ahr) 4884, 4886, 6793
- Whole Foods Markets (WFM) 3574
- asbestos 1924, 2417, 3606
  - fibers 3596
  - in construction 2417
- ascariid 12050
  - infections 12033
- ASCCUE project 4691
- ascorbate biosynthesis 1709
- ascorbic acid 1685, 1708
- asexual reproduction 6150
- ash 1252, 1255–1256, 4003, 4866, 4869
  - as a fertilizer 1256
  - behavior 1252
  - characteristics 1252
  - management 11749–11750, 11755
    - around the world 11755
    - regulatory aspects 11750
  - melting 1236, 1340
    - behavior 1315
  - mixture 1256
  - residue 2195, 11738, 11741–11744, 11747–11754
    - asphaltic mixtures 11753
    - building blocks 11754
    - codisposal with MSW in landfills 11748
    - containment 11748
    - density 11741
    - disposal 11738
    - extraction leaching procedures 11750
    - for construction 11753
    - from waste combustion systems 11738
    - handling 11743–11744
    - landfill disposal 11747
    - leachate disposal 11748
    - liners 11748
    - metal separation 11744
    - moisture content 11741
    - monofills 11747
    - permeability 11742
    - Portland cement treatment 11754
    - processing 11744
    - risk assessments 11752
    - salinity of leachate 11748
    - samples 11752
    - state regulations 11751
    - storage 11744
    - testing 11751
    - treatment 11744, 11752
    - vitrification 11754
- ashfall 11747
- ash-melting furnace 4001, 4005
- ash-melting system 3998
- Asian aerosol 6753
- Asian monsoon 6747, 7258
  - impacts of aerosols 6747
- ASK-FORCE organization 4531
- asphalt 2406, 2413
  - concrete 4871
  - mixtures 2406, 2413
  - pavement 11703
  - production 11701
- aspheric nanoparticle 7891
- aspiration toxicity 4849
- assessment of estuarine trophic status (ASSETS) model 1937
- assimilable organic carbon (AOC) 10537
- assimilative capacity 1933–1934
- associated natural gas 7803
- association mapping (AM) 2532, 6430, 6432
- associative breeding value 9365, 9370
- associative genetic variance 9381
- asteracea 1115
- asthma 3641
- astronaut 8561
  - solar-flare radiation exposures 8561
- asymmetric hybrid capacitor 3430
- asymmetric hydrogenation 10172
- asynchronous machine 12142
- asynchronous tillage 157
- ataxia 2970
- atenolol 11926
- at-grade busway 1872, 1874
- Atlantic
  - meridional overturning circulation (AMOC) 2136, 7379
  - multi-decadal oscillation (AMO) 2136
  - salmon 10799–10800, 11411–11412
  - tropical cyclones 5073
  - warm pool (AWP) 7255
- atmospheric heavy metal 10583, 10588
- atmospheric airline index (AAI) 665

- atmosphere/atmospheric 310, 595, 607, 609–612, 614, 616, 623, 628, 637, 653, 2512, 9627
  - aerosol 111, 191, 311
  - air traffic 653
  - as an integrator 614
  - backscattering 311
  - biogeochemistry 606–607, 617, 3296
    - hydrologic cycle 607
    - inverse modeling 617
  - biogeochemical cycles 614
  - biota 614
  - boundary layer (ABL) 6592, 6594
  - brown cloud (ABC) 1308
  - bulk plume model 628
  - carbon 1559
    - cycle 607
    - dioxide 595, 3297, 7231, 7268, 9697, 9703
  - chemistry 310
  - chemistry transport models 8893
    - Eulerian models 8893
    - Lagrangian models 8893
  - circulation 2125–2126
  - corrosion 4251
  - dioxygen 12301
  - flows 11277, 12063
    - direct simulation 12063
  - gases 310, 10623
  - general circulation modeling (AGCM) 622, 623, 634, 6743
    - calibration (tuning) 634
    - evaluation 634
  - halogens 10135
  - iron cycle 612
  - irradiance 9638
  - lidar (ATLID) 325
  - modeling 637, 2510, 12069
  - modeling intercomparison project (AMIP) 2511, 6743, 6745, 8910
  - nitrogen 170, 8353
    - cycle 609
  - nuclear testing 8491
  - nuclear weapons test 8585, 8638, 8656, 8662
    - global fallout 8662
  - numerical model simulation 2512
  - oscillations 9639
  - oxygen 11316
    - cycle 612
  - ozone 9652, 11149, 11152
  - phosphorus cycle 610
  - pollutants 3591
  - pollution 328
  - radiation measurement program 9720
    - reanalyses 2517
    - rivers 7249
    - sulfur cycle 611
    - testing fallout 8493
    - total heating 7253
    - transport 607, 616
    - tritium 11002
    - turbulence 12207
    - water vapor 317
    - weapons testing 8620
    - winds 7398
- atmosphere-ocean climate model 10162, 10164
- atmosphere-ocean coupling process 7374
- atmosphere-ocean general circulation model 6748
- atmosphere-water exchange 594, 596–597, 600–603
  - description of transport 597
  - eddy correlation flux measurements 602
  - empiric parameterization 603
  - geochemical tracer techniques 602
  - influence of surface films 601
  - influence of waves 600
  - laboratory facilities 602
  - mass boundary layer 596
  - thermography 602
  - tracer injection 602
  - turbulent and molecular transport 596
  - viscous boundary layer 597
- atoll 2491
- atom economy (AE) 4586, 4615, 4619, 4621, 4624, 4635
- atomic age 8488
- atomic bomb test 8426
- atomic electron 3788
- atomic energy commission (AEC) 8539
- atomic hydrogen flux 9251
- atomic mass 3792
  - measurements 3792
- atomic vapor laser isotope separation (AVLIS) 5642
- atovaquone 11084
- atovaquone-proguanil 11083
- ATP/NADPH stoichiometry 358
- ATP-sulfurylase (APS) 1714
- atrazine 10959–10960
  - pesticide 2042
- atrium 902, 905, 912
  - temperature 912
- Attacin 10700
- attainable yield (AY) 2722
- attention assist system 3114
- attenuated total reflectance infrared (ATR-IR) spectroscopy 3937
- audible sound 12278
- Auger electron 8574
- Auger kiln reactor 1524
- Aujesky disease 10914
- Auristatin PE 3155–3156
- austenitic stainless steels 7197
- Australian monsoon 6752
  - impacts of aerosols 6752
- authorization agreement 11368
- auto mobilization 1858
- autochthonous pathogens 5049, 8759
- autoclaved aerated concrete (AAC) 3831
- autogamous crop 6440
- autogas 5470
- auto-highway expansion 1861
- automated
  - guideway transit (AGT) 1876, 7778, 7780
  - lighting control system 2842
  - parking facility 7795
  - passenger counters (APC) 101
  - people mover 7778, 7780, 7792
  - shading system 2837
  - transit technologies 7787, 7794
  - vehicle 7795
    - location (AVL) 91, 98, 1835, 1852
    - monitoring (AVM) 91
- automatic
  - braking 84
  - cab signaling (ACS) 5967
  - driver assistance systems 11126
    - machine-vision-based 11126
  - emergency break 3068
  - generation control (AGC) 12104, 12111, 12107, 12124
  - heat exchanger cleaning system 1343
  - identification system (AIS) 259
  - mapping 3077
  - opening vents (AOVs) 6881
  - passenger counter (APC) 91, 98, 103
  - pedestrian gate 5949
  - photocontrol 2842
  - snow detection 289
  - train control (ATC) 5967
  - train protection (ATO) 1869
  - train stop (ATS) 5967
  - vehicle detection 11478
  - water pasteurization indicator 9505
  - weather station (AWS) 9323
- automation sequence 2980
- automobile 7587
  - catalytic converter 7587
  - propulsion technologies 268
- automobile-centric land use 10264



- automotive
    - catalytic converters 8249
    - dynamic motion analyzer (ADMA) 3071
    - drive cycles 8243
    - electronic technologies 3053
    - fuel cell 8235
      - cooperation (AFCC) 8239
      - history 8235
    - imaging application 11099
    - imaging environment 11100, 11103
      - human perception 11100
    - industry 6954
      - sensor fusion 6954
    - night vision systems 6952
    - pedestrian recognition system 6953
    - polymer electrolyte membrane (PEM) fuel cells 8241, 8243, 8247–8248
      - cold temperatures 8247
      - commercialization 8248
      - electrode degradation 8247
      - operational modes 8241
      - stacks in vehicles 8243
    - shredder residue (ASR) 5244, 8811, 8819
    - transportation 8193
    - automotive vision environment 11106
  - autonomous road vehicle 2464
  - autonomous underwater vehicle (AUV) 7291
  - auto-regressive moving average (ARMA) 3119
  - autothermal gasification 1429
  - autothermal reforming (ATR) 3862, 3883, 3964, 8193
  - autunite 10413
  - auxiliary solution cell (ASC) 10428
  - available transmission capacity (ATC) 12176
  - available vehicle-occupancy (AVO) 4953
  - avalanche photo detectors (APDs) 327
  - average breeding value 420
  - average eye closure speed (AECS) 3128
  - average social breeding value 9390
  - avian
    - breeding 648
    - germ cell lineage 646–647
      - propagation 647
    - influenza 641, 648, 1759, 10860
      - virus 2971
    - leukosis virus 2968, 10904
    - livestock 1747, 1749
    - malaria 5369
    - retrovirus 642
    - transgenesis 638, 641, 647
      - methods 641
      - technologies 10813
  - aviation 205, 652, 656, 658
    - and atmosphere 652
    - CO<sub>2</sub> 658
    - fuel 658, 921
    - net warming 656
  - aviation-induced cloudiness (AIC) 662
  - avidin 4038
  - avirulence (Avr) gene 2700
  - Avogadro's number 6079, 6083
  - awareness model 3110
  - axial flow reactor design 3992
  - AZaspiracid shellfish poisoning (AZP) 9086
  - azeotrope 995, 11434, 11448
  - azeotropic ethanol 11434, 11448
  - azidothymidine 3153
  - azithromycin 506
  - azole 500
  - azooxanthellate 2493
- ## B
- bacillary dysentery 5060
  - bacillus 2570
  - Bacillus sphaericus* 4021
  - Bacillus thuringiensis* (Bt) 4013, 4014, 4024, 4037, 5451, 10715
    - brinja 4527
    - cotton 2311, 4507, 4526
    - endotoxins 4516
    - insecticidal toxins 4014, 4024
    - maize 4530
    - pest resistance 4024
    - toxin 4026, 4028
      - first-generation crops 4026
      - mutagenesis experiments 4028
  - back pressure turbines 11776
  - backcross procedure 6436
  - back-emf 25, 35
  - background radiation 5586
  - background sound levels 12290
  - back-pressure steam turbine 4311
  - backscatter
    - coefficient 311
    - lidar 325
  - back-to-back converter 9347
  - backup compression chiller 9539
  - bacteria/bacterial 498, 1093, 5049, 5054, 7671, 7684, 9088
    - antibody 1653
    - artificial chromosome (BAC) 2607, 2691, 2701, 2704–2705, 2713, 10909–10910
    - biodiversity 5049
    - biofilters 6313
    - blight 2576
    - disease 10700
      - from ocean 5063
      - from seawater or seafood 5048
    - enzyme  $\beta$ -glucuronidase (GUS) 8049
    - fish pathogens 6360
    - hydrolysis 11940
    - infections 10854
    - in the ocean 5049
    - pathogens 9086, 9088, 9102
      - seafood-associated 9086
      - shrimp-associated 9102
    - proteins 8049
    - secretion systems 5054
    - sulfur-reducing 1093
  - bactericides 2567
    - peptides 10700
  - bacteriophages 11389
  - bacterioplankton 11390, 11408
  - bacterium 4016
    - *Bacterium coli* 5059
    - spore-forming process 4016
  - Bacteroides* 6326
    - phages 6329
    - *thetaitaomicron* 6328
  - bactofection 2585
  - baffling effect 9178
  - bagasse 1006–1007, 1011, 1276, 1292–1293, 11448
    - lignocellulosic-rich 1292
  - baghouse 8357, 11807
    - filter (BHF) 1250, 1340, 5239, 11711
    - fines 11701
  - balance of plant (BOP) 6561, 6828, 8206
  - balanced intermodal transportation 1862, 1875
  - balancing area cooperation 8990
  - balneology 4164, 4170, 4354, 4359
  - bark combustion 1342
  - barley 1111, 1122, 2705
    - grain 9149
      - dormancy 9149
    - inflorescence 2705
    - yellow dwarf luteovirus 1281
  - barnase gene 2593
  - barotropic flow 5870
  - barracuda 827, 832
  - barrage 10613, 10614
  - barrier 2447
    - reefs 2491
  - barrow gas field 340
  - basal cell carcinoma (BCC) 9661, 11398
  - basalt 1910
  - basaltic tuff 1910
  - baseline surface radiation network (BSRN) 7910, 7914



- baseload electricity 4765
- baseload plant 8982
- basic
  - daylighting strategy 2810
  - diffusion 2017
  - energy flow 12213
  - oxygen furnace (BOF) 8810, 11594
  - reproductive number 5347
- Bastnäsite 9948
- batch combustion 1354
- batch reactor 3936
- bathymetry 5870, 6761, 8679
- bathythermograph 4911
- battery 671–687, 689, 692, 694–696, 698–700, 702, 704, 706, 708, 710, 711, 740, 741, 747, 748, 765–772, 774–777, 779, 785, 793, 2935, 3392, 3427, 3472, 3479, 3480, 3847, 3852, 5107, 5882–5884, 5888–5890, 6146, 6499, 6940, 7547, 7548, 8112, 8113, 8121, 8715–8718, 8741, 8751, 11510
  - absorptive glass mat (AGM) 5887
  - active materials 740
  - anode 740
  - assembled characteristic charging 684
  - assembled constant-current charging 684
  - assembled taper characteristic charging 684
  - bulk charge 673
  - cage egg production 10877
  - capacitive contactless charger 696
  - capacity 741
  - cathode 708, 740
    - materials 711
  - cells 675
    - balancing 700
    - construction 772
  - cathode- and anode-active materials 7547
  - charger configurations 687
  - charge-sustaining (CS) mode 8113
  - charging circuits 698, 704
    - electromagnetic compatibility (EMC) 698
    - electromagnetic interference (EMI) 698
    - for photovoltaic (PV) systems 685
    - with AC sources 687
  - charging efficiency 769
  - charging protocols 695
  - charging techniques 671, 680
  - chemistries 674, 768, 8716
  - choosing 775
  - constant-current charging 681
  - constant-voltage charging 681
  - contactless charging 694
  - current 689
  - current-based SoC estimation 699
  - designs 5882, 5884, 5885, 5887
  - discharge
    - current I 741
    - efficiency 769
    - rates 5889
    - reactions 5888–5889
  - dry 775
  - dual Li-ion intercalation system 710
  - effect of temperature 5890
  - efficiency 770
  - electric vehicle (BEV) 3475, 7847–7849, 7853–7858, 10495, 10502, 11509
    - demand side management (DSM) 7848, 7857
    - economic feasibility 7856
    - human behavior modeling 7855
    - mobile decentralized storage 7849
    - modeling 7854
    - new markets 7853
    - outage management (OM) 7848, 7858
    - policy strategies 7854
    - power system planning 7855
  - electrical energy storage 767
  - electrical modeling 770
  - electrochemical cells 741
  - electrochemistry 772
  - electrolyte 5890
  - electromagnetic interference (EMI) 696
  - energy capacity 775
  - energy density 741, 3479
  - energy management 11505
    - depth of discharge (DoD) 11505
    - state of charge (SoC) 11505
  - energy loss 5107
  - energy/power ratio 8121
  - energy storage systems (BESS) 692, 704
    - characteristics 3472
  - equalization charge 673
  - failure 673
  - flat and tubular electrodes 5885
  - float charging 673
  - for vehicle applications 11510
  - gel batteries 5887
  - gravity measurement 699
  - health measurement 699
  - hermetic seals 6499
  - industry 706, 8715
  - interface electronics 3480
  - internal resistance 771
  - Kalman filter technique 700
  - layered transition lead acid 771
  - layered transition metal oxides 711
  - lead
    - acid 673, 674
    - antimony 774
    - calcium 774
  - life 776, 5890
  - lithium
    - air 766
    - ion 677, 785
    - iron sulfide 678
    - metal salt 766
  - maintenance 5890
  - management 671, 677, 698, 3392
  - management system (BMS) 699, 701, 703, 3371, 6146
    - cell charge equalization 701
    - flying capacitor 701
    - passive balancing 701
    - standby batteries 699
    - switched capacitor charge equalization method 701
    - DC-DC converter methods 703
  - materials 6514
  - material safety data sheets (MSDS) 5884
  - maximum power output 769
  - medical devices 6499
  - metal air 679, 793
  - mixed constant-current and constant-voltage charging 682
  - monopolar and bipolar electrodes 5884
  - multi-output transformer 702
  - nail penetration test 8741
  - negative terminal 741
  - nickel systems 8751
  - nickel-cadmium 676, 777
  - nickel-metal hydride 676, 779
  - nickel-zinc 679
  - organic functional polymers 7548
  - overcharge reactions 5889
  - positive terminal 741
  - power 775
    - capability 741
    - power split strategies 3480
  - pulse-charging technique 682
  - pulse-width modulation charge regulators 686
  - rapid charge 674
  - rechargeable 741, 769
  - redox-flow 766
  - separator 8717, 8726, 8728, 8730, 8731, 8733–8734, 8736–8737, 8751–8753
    - characterization 8728
    - classification 8718

- electrical resistance 8728
- Gurley number 8728
- mathematical modeling 8751
- melt integrity 8736
- mix penetration strength 8734
- pore size 8731
- porosimetry 8731
- porosity 8730
- properties 8728
- puncture strength 8733
- requirements 8726
- shrinkage 8734
- shutdown 8734
- tensile strength 8734
- tortuosity 8731, 8752
- wettability 8736
- wetting speed 8736
- series charge regulators 685
- shunt charge regulators 686
- silver–zinc 748
- single-phase, phase-controlled rectifiers 687
- sodium-beta 680
- sodium sulfur 678, 765
- solar energy storage 5883
- stacked cells 8717
- starting-lighting-ignition 674
- starved electrolyte 775
- state of charge (SoC) 699, 5888, 8112
- string 673
- sustainability 706
- taper characteristic charging 683
- technologies 303, 768, 3392
- temperature effect 770, 776
- tender 673
- thermal management 5107
- thermal runaway 8741
- three-phase, phase-controlled rectifiers 689
- trickle charge 673
- valve-regulated lead-acid (VRLA) 675
- voltage 681–682, 689, 3374–3375
  - measurement 699
- waste processing 7548
- zinc–air 748
- zinc bromine 680, 793
- zinc–manganese 747
- battery-powered electric vehicle (BEV) 10524
  - wheel-to wheel results 10524
- battery/ultracapacitor system 5111–5112
  - active interconnection 5112
  - passive interconnection 5111
- Baumann rule 4257
- bauxite 11597, 11832
- bay area rapid transit (BART) 811
- Bayesian
  - classifier 3073
  - decision networks 2484
  - decision rule 11460
  - method 391, 398
  - model 432
  - networks (BNs) 3117, 3120
  - statistics 6697
  - theorem 2110
- B-dot equation 4096
- beacon 3076–3077, 11572
  - beacon-assist geographic forwarding (BGF) 11552, 11554, 11555
  - interval 11556
- beam radiation 10625
- beam therapy 8561
- Beavis effect 490
- bedrock 5649
  - aquifer 4796
  - geologic character 5649
- beef cattle 388, 1723–1738, 1772
  - accuracy 1730
  - birth weight 1728
  - breeding 1770
    - average 1727
    - complementarity 1735
    - selection 1732
    - pyramid 1724
    - value (BV) 1726
  - calving ease 1728
  - composites 1735
  - crossbreeding 1732–1734, 1736
  - economic index 1731
  - expected progeny difference (EPD) 1724, 1729
  - genetic defects 1725
  - genetic improvement 1724
  - heterosis 1734
  - independent culling levels 1731
  - industry 1723
  - maintenance energy (ME) 1729
  - marbling (MARB) score 1729
  - Mendelian sampling 1727, 1730
  - milking potential 1733
  - molecular breeding values 1738
  - molecular information 1737
  - multiple-trait selection 1731
  - percentile ranks 1727
  - phenotype 1724
    - of horns 1725
  - rebreeding 1733
  - retained heterosis 1734
  - tandem selection 1731
  - trait types 1725
- transmitting ability (TA) 1726
- weaning weights 1728
- Beer-Lambert Law 6074
- Beer-Lambert-Bouguer's law 7917
- Beer's law 2620, 2766, 3215, 7914, 7917, 7924–7925
- beet 1113
- behavior of organisms 10075
- benchmark dose (BMD) 3255
- beneficial footprint 9032
- beneficial insects 10717
- beneficial resource repletion 9036
  - application tools 9036
- benefit cost ratio (BCR) 4789
- benign tertian malaria 11075
- Benson-Calvin cycle 2645
- bent-axis hydraulic motor 5101
- bentazon 10352
- benthic
  - animals 3042
  - ecosystems 6194
  - environment 1972
  - habitat 1965
  - life 6410
  - macroinvertebrates 3273
    - effects of contaminants 3273
  - models 1935
  - organisms 11234
  - spot photography 6409
- benzene 302, 306, 857, 7593, 10440, 10638
- benzenesulfonic acid 6557
- benzimidazole fungicide 2568
- benzo(a)pyrene 3612, 10638
- benzofuran 4873
- benzoic acid metabolism 1193
- benzothiazole 253
- Bergen School of meteorology 12065
- Bernoulli equation 12205
- beryllium 172, 3716, 3731–3733, 3740, 3743, 4888, 8582
  - activity 3743
  - depth distribution 3732
  - extraction 11597
  - fallout 3717, 3732
  - fluorides 4059
  - for documenting soil redistribution rates 3732
  - neasurements 3731–3733, 3740
  - production 3716
- beta decay 8564
- beta radiation energy 11058
  - Monte Carlo simulation 11058
- beta zeolite 4592
- beta-amylase 992
- Betts-Miller scheme 629

- beverage manufacturing 2072
- bias correction spatial disaggregation (BCSD) 8916
- biaxial incident angle modifier (IAM) 6035
- bicarbonate 1909, 1915, 2899, 7330
- bicycle, see bike
- bicycling 806
- bi-directional energy- and light transmission value 2889
- bi-directional transmission distribution function 2839
- Bifidobacterium* 6326
- Big Brother experiment 8907
- bike 808
  - parking 806, 820
    - at train stations 806
    - metro stations 806
    - parking spaces 808
  - rack 813, 816
  - routes 811
  - sharing program 815
  - station 806, 811, 815
  - transport 6498
- bike-and-ride 812
  - facilities 806, 808
  - parking 813
- bike-bus integration 816
- bike-rail integration 820
- bike-transit
  - coordination 810
  - integration 807–809, 811–815
    - case studies 809
    - Chicago 813
    - Minneapolis 813
    - New York/New Jersey 815
    - Portland 812
    - San Francisco 811
    - Toronto 814
    - Vancouver 812
    - Washington 815
- Bikini atoll test site 3540
- binary closed-loop power plant 4193
- binary copper compound 6088
- binary Cry toxin 4020
- binary ionic liquid electrolyte 6054
- binary vectors 2592
- binding energy 3792
- bioaccumulation 822, 826, 831, 3270, 8404, 10662
  - factors (BAFs) 3587
  - toxins (PBTs) 3444
- bioactivation pathway 3629
- bioaerosol 115, 3640
- bio-alcohol 10752
- bioassay 1650, 1652, 2337
  - detection strategies 1652
  - immunomagnetic particle purification 1652
  - referencing 1650
- bioassessment protocols 3273
- bioaugmentation 1632, 1638, 2444–2445
- bioavailable metal 10054
  - uptake 10054
- biobarrier 10415
- bio-based product 1269, 9031
- biobecoming 8865
- bio-butanol 10752
- biocatalysis 7597–7598, 7612
  - sulfur oxidation 7597
- biocell 5723
- biocentric design 8861
- biochar 845, 846, 850, 851, 853, 855–857, 861, 870, 873, 875–877, 879–883, 885–888, 1518, 1528, 2117
  - agri-environmental policies 886
  - agronomic value 885
  - carbon 879, 880
    - abatement 861
    - stability factor (CSF) 857
    - storage value 885
  - carbon-to-nitrogen ratio 883
  - cation exchange capacity 853
  - contaminants 855, 880
  - dioxins 856
  - emission of nitrous oxide and methane from soil 883
  - engineered 886
  - fractions 881
  - heavy metals 855
  - in grassland systems 887
  - key functions 875
  - loss 881
  - microbial activity 876
  - polycyclic aromatic hydrocarbons (PAHs) 855
  - predictability 887
  - production 851
    - cost 873
  - renewable energy incentives 886
  - soil nutrient dynamics 882
  - specific surface area 853
  - stability 857, 880
  - stable carbon 875
  - sustainability 888
  - waste management 886
- biochemical
  - composition 2410
  - conversion 1222
  - oxygen demand (BOD) 2066, 5688, 11968
- biochemical–molecular level 11396
- biocide 155, 2721
- bioclimatic
  - analysis 897
  - architecture 9741
  - design 893–895, 899, 902, 912
    - atriums 902
  - large-scale applications 912
  - practices 899
  - resources 895
  - strategies 894
  - wintergardens 902
- bioclogging 7684
- biocoal 1082, 1084–1085
  - applications 1085
  - properties 1084
- bioconcentration 822, 3270
  - factor (BCF) 4850, 4860, 7020, 7029, 10662
- bioconduit 1632, 1638
- biodegradable
  - compounds 11977
  - micropollutants 11978
  - organic carbon (BDOC) 10537
  - organic matter 11895
  - wastes 9984
    - composting 9984
- biodegradation 1628, 1629, 1635, 2433, 9053, 10151, 10440, 10660, 11976, 11977, 11979
  - of micropollutants 11979
  - of vinyl chloride (VC) 2433
  - sludge characteristics 11977
- biodeposition 1967, 9176
- biodetritus 832
- biodiesel 359, 360, 921–925, 927, 930, 931, 933, 1002, 1028, 1035, 1040, 1042–1045, 1054, 1062, 1232, 1490, 1561, 1592, 1613, 1614, 1616, 1670, 3460, 5463, 5466, 5471, 5472, 5474, 5475, 5488, 8978, 10507, 10511, 10512, 10756, 11434, 11446
  - advanced 1045, 1054
  - algae-based 360
  - cetane number 5475
  - conventional 1044
  - emissions 1035
  - engine emissions 931
  - environmental issues 931
  - history 922
  - iodine number 5474
  - microalgae 927

- nonedible oils 925
- production 923–924, 5466
  - lipase-catalyzed 929
- quality 930
- rapeseed oil 924
- soybean oil 924
- soybean-based 10512
- specifications 930
- sustainability 933
- tar-loaded 1670
- utilization 923
- viscosity 5472, 5474
- biodiffusion 9141
  - transport 9135
    - coefficient 9137
- biodigester 1923
- biodiminution of metals 8407
- biodiversity 940, 948, 1138, 1140, 1490, 1509, 1533, 1536, 1542, 1543, 1557–1559, 1561, 1567, 1572, 1574, 1575, 1749, 1773, 2267, 2300, 2309, 2742, 2749, 2756, 3299, 3358–3359, 3361, 4749, 5553, 7974, 9030, 9035, 10031, 10086, 10090, 10357, 10358, 10726, 11333, 11348
  - as reflected by breed 1749
  - assessment 10086
  - climate change effects 1575
  - consequences 1558
  - conservation 948, 956, 1557, 1572, 1574
    - at business sites 956
  - ecotones 3358
  - green roofs 4701
  - history of research 3359
  - in farm animal genetic 1773
  - in the city 938, 10357
  - invasive species 5553
  - local 1543, 1559
  - loss 940, 1493, 1509, 1543, 1559, 2749, 2756, 9028, 10358
  - policy 2309
  - protection 1533
  - reduction 1138
  - shaping 3361
  - value 1567
- bioelectricity 862, 871
- bioenergy 861–862, 867, 871, 926, 1009, 1041, 1203, 1270, 1477–1478, 1485, 1489, 1493–1494, 1505, 1533–1534, 1542, 1548, 1551, 1557–1558, 1565, 1609, 2681, 5410–5411, 8976
  - agricultural residues 1270
  - carbon-neutral system 860
  - conversion 1557
    - routes 1494
  - costs 1558
  - crops 1477, 1485
  - cultivation 1542
  - demand 1565
  - from waste products 5410
  - globalization 1534
  - plants 1478
  - potentials 1542, 1551
  - process chain 1493
    - costs 1493
    - water use 1544
  - purpose-grown 5411
  - routes 1609
  - sources 1494
  - supply 1565
  - sustainability requirements 1505
  - technical restrictions 1505
  - transport costs 1557
  - transportation 1494
  - use 1490, 1497, 1551
    - land use change (LUC) 1497
    - sustainability 1490
- bioethanol 189, 867, 921, 935, 961, 987, 1001, 1040, 1042, 1046–1047, 1199, 1222–1223, 1232, 1477, 1499, 1502, 1561, 1616, 8978–8979, 10752
  - conventional 1046
  - from celluloses 961, 8979
  - from starch 987, 991
    - grinding process 991
  - from sugar 1001, 8979
  - lignocellulosic 1047
  - plants 1502
  - production 1477
- biofilm 2029
  - toxin diffusion 2029
- biofilter 555, 10108–10109
- biofloc 535
  - aquaculture 8203
- biofortification 1690, 2536, 4525
- biofouling 1624, 3564, 7304, 7314, 10539
- biofuel 268, 347, 348, 352, 363, 549, 553, 861, 868, 921, 922, 934–936, 962, 997, 1002, 1006, 1019, 1021, 1025–1027, 1030, 1032, 1034, 1035, 1040, 1047, 1054–1055, 1057–1059, 1061, 1063–1064, 1067, 1073, 1200, 1216, 1237, 1269, 1314, 1315, 1352, 1420, 1427, 1496–1497, 1499, 1500, 1549, 1554, 1562, 1574, 1587, 1593, 1616, 1925, 2271, 2685, 2737, 2756, 3393, 5126, 6245, 8977, 9832, 9846, 10503, 10506–10508, 10513, 10515, 10527, 10743, 10744, 10752, 11316, 11430, 11431
  - advanced 1500
  - algae-based 10527
  - ashes 1497
  - ash-related problems 1315
  - blends 11431
  - calorific value 9832
  - capital investment requirements 1054
  - carbon 10506
    - neutrality 1035
  - characteristics 1314
  - chemical composition 1314
  - collection 1496
  - crops 1554, 2756
  - cultivation 1496
  - economic feasibility 1549
  - emissions 1034
  - energy density. 9846
  - environmental impacts 1057–1058
  - European directive 935
  - feedstock 5905
    - fish processing co-products 5905
  - first-generation 1006, 1500, 1549, 1562
  - food prices 1500
    - food vs. fuel debate 1499
  - for micro cogeneration 1420
  - from siliceous algae 1925
  - fuel
    - orientation 1427
    - delivery and storage 1030
  - future-generation 1063
  - global warming 1064
  - green house gas emissions 934
  - growth 1027
  - industry 1030, 2756
  - land use 1496
  - life-cycle analysis (LCA) 10506, 10513, 10514
    - coproduct treatment 10514
    - boundary 10507
  - life cycle impact assessment 1059
  - logistical structure 1019
  - net calorific value 1200
  - non-advanced 1500
  - of the next generation 1216
  - pathways 10506, 10508
  - pellets 1073
  - polygeneration 1427
  - production costs 1054–1055, 1593
  - production 1442, 1495, 1500, 1591–1592, 10515
    - capital-related costs 1591
    - consumption-related costs 1591
    - economic assessment 1591
    - negative impacts 1495
    - process chain 1442

- total capital investment 1592
- wheel-to-wheel (WTW) life cycle assessment (LCA) 1500
- second-generation 1574
- supply chains 1587
- use 1032
- well-to-wheel costs 1055
- refining 1027
- residues 1497
- second-generation 936, 1006, 1500, 1549
- supply chain 1030, 1058
- sustainability 1057
- sustainable buildings 1025
- synthetic 1047
- technical combustion properties 9832
- transportation 1061
- upgraded new solids 1067
- World Trade Organization (WTO) 1021
- biofumigation 2577
- biogas 978, 980, 982, 997, 1026, 1029, 1031, 1043, 1050, 1081, 1089, 1091, 1093–1097, 1107, 1123, 1130, 1140, 1149, 1151, 1153, 1169–1171, 1174, 1176, 1179, 1199, 1225–1227, 1263, 1267, 1613, 1619–1620, 1622, 1624–1625, 3859, 3914, 4772, 6806, 8977, 9940, 11451, 11833–11834, 11940
  - as a fuel 1227
  - bottles 1031
  - carbon footprint 1263
  - chemical scrubbing 1625
  - cryogenic upgrading 1625
  - digester 1149, 1153
  - economic and financial sustainability 1170
  - electricity
    - economics 1096
    - generation 1267
    - production 1093
  - energy crops 1097
  - energy plants 1140
  - environmental sustainability 1170
  - fermenters 1093
  - for electricity generation 1089
  - for sanitation 1171
  - formation mechanisms 6806
  - gas-otto engine 1094
  - history 1620
  - Hi-tech applications 1089
  - ignition-oil engines 1094
  - internal methane enrichment 1624
  - lower heating value (LHV) 1225
  - membrane technologies 1625
  - micro-gas turbines 1094
  - plant 1107, 1123, 1130, 1153, 1226
    - Chinese model 1153
  - pressure swing adsorption 1625
  - process 1149
  - production 1090, 1091, 1095, 1097, 1100, 1145, 1623
    - developing countries 1145
    - energy crops 1100
    - history 1090
    - technologies 1090, 1623
    - upgradation 1623
  - reactor 1149, 1226
  - recovery 9988
  - settler (BS) 1153
  - social and cultural sustainability 1169
  - sources 1089
  - substrates
    - from industries 1174, 1179
    - from municipalities 1174, 1176
  - sustainability 1170
  - systems 1151, 1152
    - hydraulic retention time (HRT) 1152
    - sludge retention time (SRT) 1152
  - upgradation to biomethane 1624
  - upgrading plant 1622
  - use 1154, 1156, 1158–1160, 1162–1169
    - Africa 1162
    - Algeria 1163
    - Bangladesh 1154
    - Belize 1166
    - Bolivia 1167
    - Burundi 1163
    - China 1156
    - Columbia 1167
    - Cuba 1168
    - Ethiopia 1164
    - India 1156
    - Jamaica 1168
    - Kenya 1164
    - Lesotho 1164
    - Morocco 1165
    - Nepal 1158
    - Nicaragua 1169
    - Pakistan 1158
    - Philippines 1159
    - Rwanda 1166
    - Tanzania 1165
    - Thailand 1160
    - Tunisia 1165
    - Vietnam 1160
  - utilization 6806
  - yields 1107
- biogasification 11665
- biogas-sanitation 1148, 1151, 1169
- biogenic
  - carbon 4759
  - gas 7449
  - uranium 4778
  - volatile organic carbon (BVOC) 3225
- biogeochemical
  - cycles 6383–6384, 10658
    - role of modeling 6384
  - ecosystem 11332
  - processes 11328
  - reaction path modeling 4099
- biogeochemistry 606, 3297, 4099, 6372
  - of the atmosphere 3297
- bioherm 6411
- biohydrogen 362, 1051, 8979
  - production 5116–5117, 5119–5120, 5122
    - by dark fermentation 5120
    - combined dark and methane fermentation 5122
  - continuous stirred-tank reactor (CSTR) 5119
  - dark fermentation 5117
  - hydraulic retention times (HRT) 5119
  - photofermentation 5120
  - photolysis 5117
  - process principles 5117
- bio-indicator 8402
- bioinformatics 2530
- bioinsecticide 5457
- biokinetic models 8404, 11058
- bioleaching 6660–6661
- bioliquid 1028, 3912, 5161
- biolistics 8044
- biological
  - community 3280
  - control 5449, 5453
    - agent (BCA) 2570
    - integrated pest management 5449, 5453
  - degradation process 1226
  - diversity 6180, 10766
    - global loss 6180
  - ecology 11325
  - effective irradiance 11377
  - invasion 5548
    - pattern 5548
    - process 5548
  - invasions 3298
  - literacy 3204

- monitoring 4893
- nutrient 9035
  - removal (BNR) systems 11889
- organization 3268
- oxidation 11936, 11953, 11958
  - oxygen uptake rate (OUR) 11958
- pest control 5447
- processing 1933
  - assimilative capacity 1933
- reactor 11953
- redox signaling 3657
- research 10812, 10869
- spatial structure 3328
- species concept 10086
- surveys 3267
- traits 8437
  - allometric functions 8437
- water treatments 11912
- biolytic tank 1148
- biomagnification 822, 826, 828, 831, 8406, 10662
  - ciguatera fish poisoning 828
- biomarker 1184–1185, 3254, 3258, 3274, 4893
  - diagnostic 1185
  - predictive 1185
  - prognostic 1185
- biomass 348–349, 359, 364, 551, 561, 577, 823–824, 846, 848, 852–853, 862, 867, 872, 921, 958, 1026–1027, 1030, 1035, 1038, 1041, 1043, 1048, 1064, 1068–1069, 1072, 1074–1076, 1089, 1091, 1098, 1146, 1176–1177, 1198–1200, 1203–1206, 1214, 1222–1223, 1228, 1231–1234, 1237–1238, 1243, 1245, 1255, 1263, 1268, 1270, 1299, 1301, 1305, 1308–1309, 1313, 1347, 1404, 1424, 1445–1448, 1476–1478, 1483, 1487, 1489, 1493–1496, 1503, 1505–1507, 1509–1510, 1512, 1517, 1528, 1531, 1533, 1536–1537, 1539, 1547–1548, 1570, 1583, 1585, 1590, 1594, 1600–1601, 1607, 1609–1611, 1665, 2117, 2271–2273, 2280, 3945, 5116, 5121, 5123–5124, 5126, 5163–5164, 6020, 8975–8979, 9031, 11435, 11437, 11440–11442, 11447, 11451
  - 4F dilemma 1505
  - accumulation of neutral lipid 359
  - agglomeration 1069
  - algal 348–349
  - as building material 1548
  - as energy carrier 1233
  - as renewable source of energy 1198
  - availability 1205, 1494
  - billion ton study 1270
  - biochemical conversion 1206
  - biological processing 11447
    - boilers 1243, 1528
    - briquetting 1068
    - burning 120–121
      - organic aerosol (BBOA) 122
    - carbon footprint 1263
    - chains 1568
      - GHG balances 1568
    - coal-fired power plants 2272
    - co-combustion 1611, 2271
    - co-firing 872, 1245, 1255, 8978
    - combustion 862, 867, 872, 1231, 1232, 1250–1252, 1313, 1346, 1347, 1610, 5304
      - ash 1252
      - control systems 1346
      - for electricity generation 8978
      - NO<sub>x</sub> control systems 1250
      - particle control systems 1250
      - SO<sub>2</sub> control systems 1251
      - sources 1308
      - to electricity 1232
    - combustor 11442
    - containing celluloses 1223
    - containing starch 1223
    - containing sugar 1222
    - conversion 1041, 1496, 1600, 3945
      - into hydrogen 5121
      - plant 1204
      - processes 11440
      - routes 1203
      - technologies 1228, 5163
    - cookstove 1299, 1305, 1309
    - costs 1594
    - crop 1270–1272
      - annual 1272
      - economic issues 1271
      - farmer involvement 1270
      - impact on soil fertility 1270
      - logistics 1271
      - perennial 1272
      - crops for biofuels and bio-based products 1268
    - cultivation 561
    - demand for energy 1547
    - dual fluidized bed steam gasification 5124
    - energy 1298, 1312, 1351, 1400, 2625, 9030
      - conversion technology 1146
      - crops 2117
      - heat provision 1298, 1312, 1351
      - in developing countries 1298
      - unintended consequences 9030
    - entrained flow gasification 5124
    - feedstock (BTL) 853, 5164, 5490
      - flexibility 1590
    - fisheries 577
    - fluidized bed gasification 5124
    - for energy production 1510, 9031
    - for micro-cogeneration 1424
    - from landscape management measures 1176
    - from municipal waste 1177
    - fuel 1265, 9821, 9824, 9835, 9838, 9848
      - moisture content 9838
      - molecular Composition 9824
      - price 1265
    - gasification 846, 1214, 1426, 1446–1447, 1449–1451, 1665, 5124, 5128, 5163, 89789608
      - adsorption-enhanced reforming 5128
      - chemical basics 1449
      - for electricity and fuels 1426
      - for rural electrification 1445
      - Güssing model 5128
      - plants 5126
      - reaction 5123
      - reactor principles 1451
      - system 1030
      - technical basics 1450
    - generation 1478
      - of electricity 1447
    - greenhouse gas balance 1263
    - growth 1483
    - harvesting 364
    - herbaceous 1074
    - hydrogen 5116
    - in developing countries 1232
    - in plants and animals 1478
    - incineration facilities 9031
    - integrated gasification combined cycle (BIGCC) 1612
    - lignocellulosic 5123
    - main sources 1570
    - biomass materials 10580
    - metabolism 1483
    - micro-cogeneration 1404
    - non-lignified 1098
    - nutrients 1601
    - pelletizing 1069
    - physicochemical conversion 1206
    - plant-based 3945
    - post-combustion 2280
    - potential 1506–1507, 1536, 1539, 1570
    - power plant 1251, 1257, 1261, 1264
      - carbon emissions 1261
      - chimneys 1251
      - cost analysis 1264
      - environmental impacts 1257

- gaseous emissions 1257
- investment cost 1264
- preprocessing 1237
- pretreatment 1448
  - for gasification 1048, 1585
- processing 2273, 11437
- production 823, 1476, 1507, 1535, 1565–1566, 2616, 8976
  - competition for water 1566
  - fertilizers 1535
  - food and feed production 1535
  - land use 1535
  - pest control techniques 1535
  - protected areas expansion 1566
  - use of degraded land 1565
  - water resources 1535
- provision 1487
  - pathways 1509
- pyrolysis 848, 852, 1517, 5163, 8979
- raw material 1072
- residues 1493, 1536–1537
- resources 1228, 1531, 1533, 8976–8977
  - for biogas 1091
  - impacts 1301
- sources 1043, 1089, 1200
- storage 1238
- supply 1567
  - costs 1567
- sustainability 1064, 1503, 1512, 8977
  - requirements 1495
- thermal decomposition 1076
- thermochemical conversion 1205, 11441
- to hydrocarbons 11451
- to hydrogen systems 5126, 8979
- to liquid (BtL) 1583, 1593–1594, 1601, 1603–1604
  - comparison with fossil fuels 1601
  - comparison with other biofuels 1603
  - environmental assessment 1594
  - fuel 1494
  - learning curve effect 1594
  - life cycle assessment (LCA) 1594
  - process 2255
  - production costs 1593, 1604
  - sensitivity analyses 1593
  - technical assessment 1604
- torrefaction 1075
- upgrading technologies 1609
- use 1487, 1489, 1496, 1615–1616
  - for heat and electricity 1615
  - for transport fuels 1616
  - in stoves 1301
  - on a global scale 1607
- vegetal and animal mass 1234
- wastes 1537
- biomass–solar energy system 1372
- biomass-to-electricity plants 1238, 1240
- biomaterial 1549, 1568
- biomedicine 10812, 10869, 10875
- biomes 1560
- biomethane 348, 362, 1043, 1050, 1062, 1174, 1616, 1618–1620, 1622–1623, 1625–1626, 1662, 1674, 5121, 8979
  - anaerobic digestion 1619
  - as green gaseous vehicle fuel 1622
  - economics 1625
  - feed-in-tariffs 1623
  - gas grid distribution 1626
  - gasification 1619
  - production 1620, 1623
    - technologies 1623
  - utilization 1620
  - via biogas 1062
- biomimetic 8863
  - catalysts 7599
  - chemistry 7598
- bio-mimicry 7598, 8871, 8874, 9033, 10316
  - architecture 4732
- biomineralization 10415
- biomining 6660
  - engineering approaches 6660
- biomitigation 543, 557
- BioMOBY project 6701
- biomolecule 1647
- biomonitoring 4893–4894, 9163
  - adipose tissues 4894
  - human milk 4894
  - marine mammals 9163
  - urine 4894
- Bio-Mos 6361
- bio-oil 851–852, 1213–1214, 1614, 5164, 11439, 11445
- bio-optical algorithm 8926
- biopesticide 5451
- biopharmaceutical 926, 8059–8060, 8064–8065, 8074
  - downstream processing 8065
  - for human clinical trials 8065
  - glycan structure 8064
  - proteins 648
- biopharming 639
- biophilia 3677, 8864, 11333
- bio-phillic architecture 4732
- biopile 1632
- bioplug 1632, 1638, 1639
- biopolymer 1524, 6778, 9824, 10418
  - seaweed-based 6778
  - thermal cracking 1524
  - trenching 10418
- bioprecipitation 10415
- bioreactor 639, 1635, 1639, 3595, 6525, 10869
  - animal-based 639
  - landfilling 5730, 9986, 9991, 9992
  - wave-mixed 6525
- bioreduction 4778
- biorefinery 958, 978, 1064, 1272, 1610
  - infrastructure 1272
  - plants 1043
- bioregional design 914
- bioremediation 349, 1627–1632, 1639, 1642–1643, 2300, 2444, 3595, 4099, 6661, 7077, 10151, 10155, 10438, 10440
  - advantages 1629
  - as a mitigation tool 1629
  - candidate contaminants 1629
  - disadvantages 1630
  - economics 1631
  - ex situ or in situ processes 1631
  - for sustainable mitigation 1632
  - mitigation
    - programs 1642
    - strategies 1643
- biosafety 2292–2293, 2295, 2297–2298, 2305, 2309–2311, 4500–4501, 4503, 4506, 4509–4510, 4514, 4517, 4519, 4524, 4529, 10747, 10758, 10769, 10917
  - advisory commissions and committees 2311
  - assessment 4517, 4519
  - Brazilian legislation 4510
  - clearing-house 2305, 10769
  - education 4503
  - European legislation 4510
  - framework 2288, 2290, 2292, 2295, 2299–2300, 2302, 2304
    - Argentina 2288
    - Canada 2290
    - China 2292
    - India 2295
    - International Obligations 2304
    - South Africa 2300
    - The Philippines 2299
    - United States of America (USA) 2302
  - policymaking 4524
  - policy 2309
  - regulation 2293, 2297, 2311, 10769
    - in agriculture 4509
    - science debate 4514
  - regulatory process 10769
  - regulatory systems 2310, 2313
    - process-based 2313



- reserve level trials 2298
- system 2305
- biosensor 1646–1648, 1650, 1654, 1659
  - bench-top SPR systems 1647
  - detection limit by analyte type 1654
  - sample acquisition 1650
  - self assembling monolayers (SAMs) 1648
  - sensor surface preparation 1648
  - small molecule detection 1654
  - storage and preservation 1650
  - surface
    - passivation with blocking proteins 1650
    - plasmon resonance (SPR)-based 1646
- bioslurry 1149, 1155, 1632
- bio-SNG 1051, 1062, 1444, 1612, 1663–1665
  - biomass
    - pretreatment 1664
    - resources 1663
    - supply 1663
  - conversion technology 1664
  - from biomass 1612
  - gasification 1665
  - mechanical pretreatment 1665
  - SPREETA 1659
  - thermal pretreatment 1665
  - thermochemical pretreatment 1665
  - thermochemical production pathway 1664
- biosolids 2417, 7673
  - co-digesting 2417
- biosparging 2445, 10152
- biosphere 189, 191, 635, 8635, 10165
  - accidental introduction of pollutants 8635
  - net primary productivity (NPP) 10165
  - nutrient certificates 9041
  - reserves 11353
- biostimulation 4099
- biosurfactant 5458
- biosynthesis 822
- biosynthetics 2685, 10743
  - enzymes 4035, 6531
    - metabolic channeling 6531
  - fuels 1064
  - natural gas (Bio-SNG) 1661, 1662, 1667–1672, 1674, 8979
    - carbon dioxide removal 1669
    - cold gas efficiency 1671
    - distribution infrastructure 1669
    - entrained-flow concept 1674
    - gas cleaning 1667
    - greenhouse gas emissions 1672
  - methanation 1668
  - pathway 6528
  - production 1662
  - production costs 1671
  - production pathways 1669
  - raw-SNG upgrading 1668
  - reference concepts 1669
  - technical assessment 1670
- biotech crop 4433, 4435, 4463, 4466, 4468, 4470, 10715, 10745, 10759
  - economic effects 4468
  - economic impact 4435
  - global economic impact 4433
  - nonpecuniary benefits 4466
  - total cost 4470
- biotechnology 1677, 1692, 2287, 2291, 2294, 2685, 4433, 4471, 4496, 4500–4501, 4506, 4509, 4511, 4522, 4534, 5456, 8027, 10706, 10743, 10758, 10880–10882
  - benefit-cost ratios 2287
  - Brazil 4511
  - commercial agriculture 4533
  - deficit model 4501
  - economics 4506
  - education 4500
  - ethical dialogues 10882
  - food-safety management 2294
  - for nutritional improvement 1677
  - information systems 4522
  - monological dialogue 10881
  - nutritional improvement 1692
  - policies 4509
  - public discussions 10880
  - public participation 10880
  - regulatory framework 2291
  - respect for autonomy 10880
  - safety net 2291
  - strategies 1692
  - wicked problems 4534
- biotic
  - diversity 3287
    - ecosystem 3287
  - elicitors 6527
  - homogenization 951, 11337
  - index 3267, 3273, 3587
  - invasion 154
  - ligand model (BLM) 3585, 10052, 10053, 10055, 10058, 10059
    - bioaccumulation 10058
    - physiologically based approach 10058
    - predicting toxicity in algae 10059
    - toxicity-based approach 10058
  - limitation 154
  - resistance 5550
  - stress 2725, 10725, 10744
  - stress tolerance 10748
- biotin 1684
- biotope 944–945, 952, 10368
  - area factor 4711, 4736
- biotoxicity test 4868
- biotoxin detection 9093
- biotransformation 3256, 10660, 12299, 12301, 12305
  - modifiers 12305
- bioturbation 7026, 8397, 8399, 9136
  - transport 9135
- bioventing 1632, 2448, 10151
- biowaste 3914, 11663, 11665
- biparental linkage mapping 6429
- bipolar
  - batteries 5892
  - cell ctacks 11514
  - bipolar plate 7708, 7877, 11514
- bird 10089
- birth defect 3638–3639
- bisphenol A (BPA) 2090, 3258, 3261, 3586, 3636, 3637, 4861, 4862, 6902
  - hazard assessment 4861
  - low-dose effects 3261
- bis-sulfonyl imide acid 8338
- bitumen 2407, 7451, 7461, 7465, 7467, 7470, 7478, 7809, 7812, 7814, 7819
  - foamed 2407
  - mining 7812
  - recovery 7811–7814, 7816–7817
    - direct heating of the tar sand 7813
    - hot-water process 7811
    - non-mining methods 7814
    - oleophilic sieve process 7813
    - SAGD (steam-assisted gravity drainage) 7817
    - solvent extraction process 7813
    - thermal methods 7814
  - separation 7812
    - cold-water process 7812
    - sand-reduction process 7812
    - spherical agglomeration process 7812
    - upgrading 7819
- bituminous coal 2169, 2177, 2229, 2233, 3835, 8350
- bitumoid 7465
- bivalent cations 8608
- bivalve 518, 1967
  - aquaculture 1959–1961
  - carrying capacity 1959
  - harvesting 1961



- ongrowing 1961
- processing 1961
- seed collection 1960
- biodeposits 1967
- culture 1935, 1970
  - social carrying capacity 1970
- molluscs 9176
- production 1960
- shellfish 9176, 9178
  - filtering seston 9176
  - filtration capacity 9178
  - releasing nutrients 9176
- Bjerknes feedback mechanism 2126
- black carbon 124, 631, 10123
  - aerosol 190, 1308, 10120, 10124
- black coal 2177
- black hole 11102
- black redstart 4722
- black roofers 4736
- black water event 8926
- blackbird 946
- blackbody
  - radiation 11115
  - temperature 9708
    - Planck distribution 9708
- blackout 10935, 10940–10941, 10945–10950, 10953
  - disturbance propagation 10945
  - pre-outage conditions 10940
  - prevention 10946
  - quick restoration 10950
  - real-time system monitoring 10947
  - risks 10940
  - symptoms 10941
  - system integrity protection schemes 10948
  - system restoration 10949
- blade element momentum theory 12208
- blast furnace (BF) 8810, 11594
  - slag 11594, 11701
- blastocyst 6151, 6162, 6170, 7218
  - injection 10821
- blastoderm 641, 646
- blastomere 6151, 6166, 6167
- blend morphology 7570
- blind spot detection (BSD) 71
- blinds 2868, 2876
- block copolymer 6548, 6550
- blood fluke genera 12044
- blood lead concentration 3259
- bloom 2085
  - ecology 2260
- blowout prevention equipment (BOPE) 4402
- blue carbon 553
- blue mussel 518, 522, 544, 548, 4822, 6764
- blue revolution 539, 562
- blue tongue 5370–5371, 5374
  - influence of climate change 5371
- blue water 1544
  - irrigation 1544
- blue-baby syndrome 3783
- blue-green algae 4820, 4830
- blue-water spearfishing 3572
- bluff surface jets 10983
  - non-buoyant 10983
- bluff wall jet 10981
- body clock 2828
- body mass index (BMI) 10264, 10646
- Bohr magneton 6079
- boiler 1243–1245, 1368, 1370, 1386, 1390, 1398, 1462, 1615
  - ash 1336, 11731, 11732, 11738
    - characterization 11731
    - disposal practice 11731
    - stabilization processes 11732
    - thermal treatment 11732
  - efficiency 1386
  - emissions 1390
  - exit gas temperature 2166
  - firewood-charged 1370
  - fixed bed combustion systems 1243
  - fluidized bed combustion systems 1244
  - gas-fired 1462
  - heat losses 1244, 1398
  - pulverized fuel combustion systems 1245
  - slag 11702
  - wood-fueled 1368
- boiling liquid expanding vapor explosions (BLEVEs) 5256
- boiling water reactor (BWR) 4063, 4906, 7198
- bolometer 5571
- Boltzmann
  - constant 2023, 3800, 6083
  - equation 3806
  - transport theory 7176
- bomb test 3712–3713, 3761
- bone morphogenetic protein (BMP) 10890
- Bonferroni correction 483
- Bonner sphere spectrometers 5569
- Boorola gene 399
- boosting technology 3117, 5536, 5537
- borehole system 4148
- borehole thermal energy storage (BTES) 4147, 4148, 4150
- boron 7199
- borosilicate glass (BSG) 1980, 9583
- Bos indicus* 1738
- Bos taurus* 1738
- Boss theory 12285
- Bothriocephalidea 12022
- Botryococcus braunii* 359
- bottled water 11938–11939
  - energy cost 11939
- bottom ash 1336, 1341, 3828, 3834, 4868, 5250, 6460, 6487–6488, 8352, 10583, 10585, 11720–11721, 11727, 11738, 11740, 11742, 11746, 11800
  - burnout 11723
  - characterization 11723
  - chemical composition 11740
  - discharger 6460
  - disposal 11722
  - dry discharge 6488
  - effect of aging 11727
  - extractor 4971
  - final destination 11724
  - leaching properties 11725
  - metals 11740
  - organic ingredients 11723
  - particle (grain) size distribution 11742
  - post-combustion treatment 11724
  - quality improvement by sintering 11729
  - quality 11729
  - toxic metals 11742
  - utilization 11729
    - potential 11727
    - regulations 11722
  - vitrification 11746
  - washing 11746
- bottom fishing 3557
- bottom pressure recorder (BPR) 4577
- Boudouard reaction 1450, 2244
- Bouguer–Lambert–Beer law 9717, 9721
- boundary growth 3307
- boundary layer
  - meteorology 6592
  - theory 6732
- Boussinesq
  - approximation 2053, 7370, 7372, 7379
  - assumption 2060
  - eddy 2051
    - diffusion coefficient 2051
- bovine
  - genome 1779
  - Johne's disease 1758
  - leukocyte adhesion deficiency 494
  - semen 1771
  - spongiform encephalopathy (BSE) 1759, 2969, 4867, 8029, 10859

- tracheal antimicrobial peptide (bTAP) 2967
- trypsin 4030
- tuberculosis 1758, 5367
- viral diarrhea virus (BVDV) 2970
- Brachypodium 6429
- brachytherapy 8520, 8561, 8581
- Bradford-Hill criteria 3266
- bradycardia 6501
- Bragg's law 6071
- brain damage 10641
- brain development 3633
- brake
  - actuator 8852
  - design regulation 11501
  - fuel conversion efficiency 5520
  - mean effective pressure (BMEP) 5477
  - specific energy consumption (BSEC) 5490
  - system design 11499
- braking 11497, 11499–11500
  - energy 8116, 8848–8851
    - distribution over braking power 8851
  - distribution over vehicle speeds 8849, 8850
  - force 8851, 8855, 10544, 11494, 11499
    - distribution 8855, 11497
  - stability 11500
  - strength 11497, 11499
  - torque 8854
- brassicas 1699
- BRAVO accident 8492
- Brayton
  - cycle 4055, 6816–6817, 6824, 7136
    - efficiency 6824
    - helium turbine 4053
    - thermodynamic 7102
  - topping cycle (BTC) 6824
- Brayton–Rankine cycle 6825, 9603, 9605
  - power plan 6826
- Brazil 1007, 1014, 1016
  - country profile 1007
  - ethanol production 1007
  - ethanol program 1002
  - Eucalyptus potential productivity project (BEPP) 1291
  - rural workers 1016
  - social governmental program 1014
- bread wheat 5321
- break crop effect 2734
- breaking chopper 12166
- breaking waves 7404
- breeder's equation 420–421
- breeding/breed, see also animal breeding 11, 386–389, 392–394, 396–397, 399–401, 408–412, 417–418, 422–425, 428, 430, 463, 471, 478, 1116, 1484, 1723, 1740, 1765, 1782, 1795, 2527, 2530, 2536, 2650–2651, 2686, 2784, 4071, 4074, 4518, 6425, 6434, 6439–6440, 6706–6708, 8017, 9361, 10395
  - additive genetic deviation 418
  - animals 1796
    - best linear unbiased predictions (BLUP) 1796
  - backcross 399
  - basic genetic model 417
  - birds in town 949
  - capacity development 6707
  - colchicination 4518
  - companies 395
  - conservation 393
  - conventional 2650
  - definition 392
  - environmental sensitivity 411–412
  - fertility 478
  - for heat resistance 10395
  - for sustainable agriculture 2527
  - genomic selection 387
  - genomics-assisted 2530, 2536
  - germplasm strategy 4074
  - globalization 471
  - horses 388
  - hypothalamic-pituitary-adrenocortical axis 1782
  - in beef cattle 1723
  - in developing countries 1740
  - in horses 1795
  - local 394
  - major genes 399
  - marker-assisted 2686, 6425, 6439
  - marker-assisted selection (MAS) 430, 2530, 2651
  - methods 1484
  - mixed model methodology 425
  - multiplication 396
  - multi-trait selection 424
  - nucleus 412
  - objective 408, 410, 424
  - of agricultural crops 1116
  - of superior animals 417
  - organizations 409, 478
  - permanent environmental effects 422
  - phenotypic selection 418
  - plan development 6708
  - principles of selection 417
  - programs 409, 463, 471, 1763, 4071, 4073, 6440, 7977, 8014, 8015
  - quantitative trait loci (QTLs) 430, 2651
  - recording scheme 411
  - scheme 410, 412, 2784
    - consumers 412
    - of selection 401
    - risks 410
  - selection index 422
  - selection of the survivors 9361
  - services 6706
  - social interactions 9361
  - stock 1777
  - strategy 1765
  - support services 6707
  - sustainable systems 394
  - synthetic 393
  - training population 400
  - trait-based 8017
  - transgenes 8060
  - tropics 1740
  - value 387, 397, 401, 408, 418, 425, 426, 428, 441, 470, 474, 490–492, 1796, 1798, 2785, 2786, 6439, 9362, 9364, 9376
    - Bayesian methods 491
    - best linear unbiased predictions (BLUP) 426, 491, 492
    - effective population size 492
    - estimation model 474
    - mixed model equations (MME) 490, 9376
  - workbench tools 6706
  - workflows 6706
- Bremsstrahlung 8575
  - angular distribution 8575
  - energy distribution 8575
- brevetoxin 4825, 9164
  - in mollusks 9095
- bright pupil effect 3129
- brightening 9731, 9733, 9735, 9737
- brightness
  - contrast control 2864
  - temperature 286
    - difference method 11640
- brine 4269, 5220
  - chemistry 4404
  - cooling curve 4269
  - extraction 4129
  - holding tank (BHT) 4312
  - piping 4291
- briquetting 1067–1068, 1070, 1085, 2186
- brise-soleil 2814
- Brønsted–Evans–Polanyi
  - postulate 3416
  - relationship 3417

- broadband
  - filter radiometer 11150
  - irradiance 9716
- broccoli 3613
- broiler 8312, 8320, 8323–8324
  - avoidable distress 8324
  - breeder females 8311
  - breeding 8308–8322, 8325
    - ascites syndrome 8316
    - delayed entry into lay 8315
    - deleterious secondary effects 8322
    - egg weight 8312
    - erratic oviposition defective egg syndrome (EODES) 8311
    - feed conversion ratio (FCR) 8314
    - framework of population genetics 8322
    - hatchability problems 8312, 8318
    - heat distress 8316
    - heat stress 8318
    - increased water consumption 8315
  - industry 8309, 8325
    - biological costs 8325
    - Chicken of Tomorrow contests 8309
    - Cornish breed males 8309
    - management 8325
    - juvenile weight for age (JWfA) 8310
    - male overfeeding 8316
    - methods for genetic improvement 8320
    - modern commercial broiler 8319
    - multistage incubator 8313
    - nipple drinkers 8315
    - production traits 8309, 8320
    - proportion of breast meat (PBM) 8309, 8317
    - pulmonary hypertension syndrome 8316
    - quantitative trait loci 8321
    - quasi-EODES at entry to lay 8318
    - reduced locomotor activity 8319
    - resource allocation model 8310, 8325
    - selection-induced genetic variation (SIGV) 8322
    - single-stage incubators 8319
    - skeletal problems 8314
    - sources of genetic variation 8321
    - stimulatory lighting 8315
    - sudden death syndrome 8316
    - target weight 8310
    - from farm to market 8324
    - heat sensitivity 8320
      - metabolic deficiency 8312
      - production 8308
        - traits 8323
      - society 8324
      - stocking density 8324
      - toxicity disorders 8312
      - unavoidable distress 8323
      - welfare 8323–8324
- broken arrow 8506
- bromate 2907
- bromine 794, 10135
- bronchitis 3641
- Bronsted acidity 4588, 4598, 4603–4604
- brook 9049
- brown roof 4701, 4711
- Brownfields 5852
  - interim use 5852
  - Revitalization Act 2011
- Brownian
  - diffusion 9135
  - motion 2017
- brownmillerite-type oxide 3894
- Brucella 5056
- Bruggeman exponent 8752
- Brunauer-Emmett-Teller model 7766
- Bruntland Commission 1491, 11683
- brush border membrane vesicle (BBMV) 4017
- brushed DC machine 18
- brushless DC machines (BLDC) 18, 23
  - motor drives 23
- brushless motor 11528
- bryolog 3155
- Bryopsis* 3161
- bryostatin 3155
- Bt, see *Bacillus thuringiensis*
- BTEX 1633
- bubble plume 10992
- bubbling fluidized bed (BFB) 5124
  - combustion (BFB) furnaces 1326
  - gasifier (BFB) 1456
- bubbly jet 10990–10992
- buck converter 690
- bucket ladder dredge 3033
- Bugula neritina* 3153, 3155
- building an ocean 7284
  - observing network 7284
- building industry 9027
- building 895, 1030, 1038, 1424, 2428, 2808, 2881, 3675–3677, 3679–3680, 3683, 3692, 3693, 3695, 3697, 3700, 4147, 4158, 4718, 4743, 5332, 5335, 5336, 5338, 5344, 6866, 6870, 7634–7635, 7637, 8375, 8703–8704, 8707–8709, 8711, 8712, 9028, 9030, 9032, 9034, 9043, 10193, 10197, 10205, 10245–10251, 10255, 10257, 10269, 10286, 10296–10297, 10342, 10554
  - acoustical problems 5336
  - airtight construction 7635
  - automation 1424
  - behavior prediction 10248
  - biological materials 9030
  - carbon
    - footprint 6866
    - neutrality 3676, 3677
  - climatization 10554
  - conditioning 4158
  - construction 2861, 11705
    - applications of waste materials 11705
    - daylight 2861
  - contemporary information technology 10257
  - control 10197, 10246, 10249
    - design 10247
    - video cameras 10249
  - costs 10205
  - Cradle to Cradle® principles 9034
  - cross-scale assessment 8709
  - daylighting 2808, 5335
    - design 3680
  - day-night load balancing strategies 3693
  - daytime cooling 3693
  - day-to-day operations 1030
  - delivery process 10245
  - design 914, 918, 2812, 5336, 10192, 10205, 10261
    - application of energy modeling tools 10205
    - climate-adapted 2812
    - for change 3700
    - for disassembly 3700
    - for sustainability 3680
    - performance-based 10205
    - prescriptive-based 10205
    - simulation tools 10192
  - ecological footprint 4743
  - embodied energy 10342
  - enclosures 3676, 3697, 10287
    - sustainability 3697, 10287
  - energy
    - balance 4718, 7637, 8375
    - consumption 10246, 10251
    - efficiency 10297
    - saving 10255
    - simulation tools 10205
  - energy-optimized 2881

- environmental assessment 8703–8705
    - proliferation 8705
  - environmental control 3679
  - environmental impact 2428
  - environmental performance 8712
  - evidence-based design (EBD) 5332, 5338, 5344
  - facades 2888, 3677
  - footprint 4147, 9028
  - foundation
    - heat exchangers 4146
    - piles 4149
  - ground-coupling 3693
  - healthcare facility design 5332
  - ice storage cooling strategy 3693
  - implementing nutrient certificates 9043
  - information modeling 10199, 10308, 10310–10312, 10314
    - computer-aided drafting (CAD) 10308
    - computer-aided facilities management (CAFM) 10312
    - construction phase 10310
    - design phase 10308
    - manufacturing phase 10311
    - materials life-cycle cost analysis (LCA) 10311
    - parametric data 10314
    - software 10314
  - integrated control 10251
  - internal heat gains 3692
  - internal load dominated 895
  - management system 10246
  - mechanical systems 10290
    - sustainability 10290
  - mechanically ventilated 10269
  - natural cooling 3683
  - natural ventilation 3683, 6866
  - net-zero energy 8708
  - nighttime ventilation 3693
  - occupancy detection 10248
  - operations 1038
  - passive infrared (PIR) motion detectors 10249
  - performance 10197, 10199–10201
    - architectural zones 10201
    - data sharing 10199
    - energy modeling tools 10208
    - graphical-user interfaces (GUI) 10194
    - interoperability 10199
    - modeling 10197, 10200, 10208
    - occupancy schedule 10200
    - simulation 10193, 10194, 10197, 10200, 10311
    - simulation tools 10193
    - surrounding ecological and environmental conditions 10201
    - thermal control zoning 10201
  - perimeter conditioning systems 3679
  - photovoltaic solar (PV) elements 3695
  - project's life cycle 10205
  - protection 3700
  - research establishment environmental assessment method (BREEAM) 8703
  - scale 11269
  - simulation 10193, 10257
  - space heating 4365
  - structural mass 3693
  - superefficient 3676
  - sustainability 3675, 10286
    - assessment 8707, 8708
    - design strategies 5338
  - technologies 6870
  - thermal comfort 7634
  - thermal conditioning 5344
  - topsoil 9032
  - total energy demand 3677
  - valuation 8711
  - vapor migration 3697
  - ventilation system design 5335
- built environment 10264, 10281, 10285–10286, 10292, 10302, 10359
- environmental statistics 10286
  - human health 10264, 10281
  - sustainability 10285, 10302
  - water 10292
- built-in roofing 7955
- bulbar poliomyelitis 8142
- bulk
- atmospheric composition 11314
  - chemicals 7590
    - catalysts 7590
  - heterojunction 7566
  - mean velocity 2032
  - silicon anode 9296
    - failure mechanisms 9296
- bulk-shielding facilities 8539
- bulky waste 5244
- bulldozer 5092
- bullet train 4932
- Bulmer effect 421
- Bunsen–Roscoe law 9651
- buoyancy/buoyant
- buoyancy-driven (stack) ventilation 6871
  - effect 6872
  - flux 10979
  - jet 10979
  - surface jets 10983
- buprenorphine 3275, 10646
- buried tritium 11003, 11021, 11060
- Burkitts lymphoma 3644
- burnable poison 3806
- burnable waste 11861
- bus 1879, 1889, 2999
- air pollution 1879
  - assignment 97
  - automation 1821
  - configuration 2999
  - fuel consumption 1879
  - lane 1821–1822, 1850, 1861, 4946
  - light rail service coordination 5988
  - line capacity 1884
  - network 5996
  - operator driving behavior 97
  - preferential treatments 1871
  - protection 3011
  - route duplication 5995
  - service 1870
  - stops 95
  - transit model 96
  - transit routes 1885
  - transit system 1870, 1873, 1893, 1895, 1900, 5982, 5995
    - capacity 1895
    - cost characteristics 1893
    - land-use densities 1900
    - transit-oriented development 1889
- bus rapid transit (BRT) 93, 1810, 1812–1814, 1816, 1818–1831, 1833, 1835–1837, 1839–1840, 1845–1846, 1854, 1870, 1873, 1881, 1891, 1894, 6496, 10924–10925
- Africa 1846
  - Asia 1846
  - Australia 1846
  - buses in tunnels 1870
  - Canada 1840
  - capital costs 1836
  - characteristics 1835
  - components 1835
  - corridors 10925
  - decision-makers 1826
  - definition 1873
  - design studies 1820
  - developments 1813
  - dual-mode systems 1820
  - early busways 1821
  - educating the public 1831
  - Europe 1845
  - exclusive right-of-way 1822
  - finance 1827
  - funding 1827, 1837

- guided buses 1870
- guideway cost 1894
- impacts 1835
- infrastructure 1824
- in the developing world 1839
- institutional issues 1818, 1822
- integrated transit systems 1837
- intergovernmental issues 1823
- international experience 1821
- interorganizational issues 1823
- intra-agency 1825
- key systems 1833
- labor and human factors 1827
- land use 1828
- Latin America 1840
- liability 1828
- long-term funding commitments 1830
- managing perceptions 1831
- marketing 1827
- network supplements 1814
- New Zealand 1846
- operating cost 1894
- origins 1820
- physical environment 1829
- planning 1828
- policy issues 1833
- political will 1826
- private participation 1837
- public relations 1827
- public transit agency 1824
- rail-ready 1816
- roadway-related issues 1830
- running ways 1816, 1819
- stakeholders 1823
- safety 1828
- stakeholder experience 1829
- status around the world 1836
- technological developments 1839
- transit-oriented development 1831
- United States 1840
- worldwide history of development 1833
- busbars 2999
- business district 955
- BusMEZZO 103
- bus-only roadway 1819
- bus-only transit system 5998
- busway 1816, 1821, 1874, 10926
  - facilities 6005
- butane 3969
- butanol 5481, 5494
  - *n*-butanol 5482
- Butler–Volmer equation 3876
- Butler–Volmer model 3420
- butterfly bush 954
- butyrate kraft lignin 6928
- by-product 10001
  - materials 11701
- bystander effect 11030
- C**
- cable 11165, 11167–11175
  - cleanliness 11168
  - components 11167
  - conductors 11167
  - contaminants 11172
  - designs 11180
    - recoverable 11180
    - recyclable 11180
  - dry design type 11169
  - electrical stresses 11165
  - electrical treeing 11174
  - extrinsic defects 11172
  - failure processes 11170
  - insulation 11168
    - breakdown 11171
  - interaction between moisture and temperature 11175
  - manufacture 11169
  - metal sheath 11168
  - oversheath (jacket) 11169
  - partial discharges 11174
  - power transmission grid 11170
  - protrusions 11172
  - screens 11168
  - semiconductive screening materials 11167
  - systems 11160–11162, 11164, 11178–11179, 11183, 11184
    - alternating current (AC) 11162
    - commissioning 11183
    - diagnostic testing 11183, 11184
    - diagnostic trends 11183
    - direct current (DC) 11162
    - electrical stresses 11162
    - life expectancy 11178
    - motorformer 11164
    - powerformer 11164
    - real-time control 11183
    - reliability 11183
    - submarine connections 11164
    - total lifetime cost 11179
    - uses 11164
    - voltage rating 11161
  - types 11165
  - voids 11173
  - voltage classes 11171
  - water trees 11175
  - wet aging 11175
- insulation breakdown 11171
- voltage classes 11171
- Cabtrack program 7786
- cadmium 3630, 4888, 6943, 10588, 10638, 11713
  - cadmium–nickel cell 750
  - telluride 9436
- Caenorhabditis elegans* 10856
- Caephalosporium caerulens* 501
- caffeine 11922, 11926
- calcareous phytoplankton 7237
- calcification 7234
- calciotropic hormone 9654
- calcite 4127, 8624
- calcium 1104, 2563, 7330, 9829, 11856
  - aluminate phosphate (CaP) cement 4404
  - carbonate (CaCO<sub>3</sub>) 6375, 7231
  - silicates 1915
  - sulfite 8360
- caldera 11621–11622, 11634
  - geophysical observations 11634
- calibration procedure 11464
- californium 8582
- CALIPSO
  - lidar system 325
  - satellite 323
- calorific value adjustment 4975
- calorimetric bomb 9833
- CalTOX model 4859
- Calvin–Benson cycle 349, 357, 362, 1479, 2624, 2626
- Calvin-cycle 1478
- calving law 2771
- camera
  - calibration 49
  - motion estimation (CME) 57, 58
  - camera motion estimation 58
  - platform 48
- Campylobacter* 5061, 6625, 6628, 7684
- Canadian–Deuterium–Uranium (CANDU) reactor 7198
- CAN-bus signal 3124
  - properties 3600
  - evaluation 3259
  - susceptible individuals 3608
  - childhood 3642
  - disinfection by-products (DBPs) 3647
  - endocrine disruptors 3648
  - geographical distribution 3642
  - pesticides 3646
- cancer 3589, 3642, 3646–3648, 9656
  - cells 3600
    - properties 3600
  - childhood 3642
  - disinfection by-products (DBPs) 3647

- endocrine disruptors 3648
- etiological causes 3589
- geographical distribution 3642
- pesticides 3646
- risk 3259, 3599, 3608
  - evaluation 3259
  - susceptible individuals 3608
- cancer-causing agent 221
- candidate gene 488–489
- Candidatus endobugula sertula* 3155
- Candidatus endoecteinascidia frumentensis* 3157
- cannibalism 10067
- Canny filter 3078
- canola 4450
  - glyphosate-tolerant 4450
- canopy 2615, 2621–2623, 2628, 2634, 2671, 2735
  - development 2623
  - canopy height 11269
  - photosynthesis 2621, 2628, 2671, 2673
  - properties 2621
  - reflectance under irrigation 2735
  - temperature depression 2634
- Canter's theory of place 10373
- cap grouting 5656
- capacitor 795, 796, 802, 3430
  - banks 3004
  - electrochemical double layer 796
  - energy density 802, 3430
  - electrochemical double layer 796
  - energy density 3430
- capacity for aquaculture 1931
- cap-and-trade program 5418
- CAPEX deferral 3013
- capillary flow porometry 8731
- caprolactam 301
- capsid protein 8133
- capture
  - fisheries 543, 578, 591, 7387, 10798
  - gamma photons 8572
- captured radiation 2624
  - photosynthetic mechanisms 2624
- capuramycin 503
- car
  - accident 66
  - batteries 9990
  - following 3137–3139
    - age-related changes 3137
    - low visibility condition 3138
    - time headway (THW) 3139
  - shredding residues 8837
  - speed 67
- carbamazepine 2339, 11924, 11926
- carbenicillin 2589
- carbide 3972
- carbohydrate 965, 1482, 1678, 3574, 4552, 4560
  - intolerant 3574
  - Protic Ionic Liquids 6787
- carbon 164–165, 721, 797, 846–848, 851, 857–858, 861–862, 870, 874, 877, 879, 1235, 2149–2150, 2251, 2254, 3427, 5412, 6133, 6374, 6773, 6775–6776, 6781, 6783, 6785
  - abatement efficiency (CAE) 862
  - abatement strategy 847
  - abatement 851, 857, 861, 870, 874
    - efficiency (CAE) 862
    - strategy 847
  - activated 797
  - aerogels 797
  - biogeochemical cycle 6374
  - black 9604
  - budgets 3223
  - capture 2150, 2165
    - and reuse (CCR) 9036
    - and sequestration (CCS) 2149, 3846
    - and storage 6839, 6847
  - catalysts 7696
  - charcoal-derived 879
  - corrosion 7719, 8225
  - cycle 607
  - debt 858, 1498, 1504, 2756
  - deposition 3907–3908
  - dioxide (CO<sub>2</sub>), see there
  - drawdown 7268
  - efficiency 4586
  - electrodes 3427
  - footprint 548, 1026, 1233, 1263, 2848
    - of buildings 1026, 2848
  - for electrical double-layer capacitors 6773
  - for pseudo-capacitors 6775
  - geoengineering 4108
  - heteroatom-enriched 6776, 6781
  - hidden C cost (HCC) 164
  - host plant 877
  - intensity 1550
  - in terrestrial systems 5412
  - isotope
    - composition, mass spectrometry 8017
    - discrimination (CID) 2650, 8017
    - techniques 4756
  - life cycle analysis (LCA) 164
  - long-term storage 848
  - materials 6128
  - mitigation 848, 857, 862
  - monofluoride (CF<sub>x</sub>) 6503
  - monoxide (CO) 170, 235, 609, 1043, 1389, 2240, 2277, 3970, 4968, 5488, 7594, 8350, 8882, 10483, 10639, 11293, 11316
    - oligomerization 2240, 3970
    - polymerization 2240, 3970
  - nanofibers 9302
  - nanotubes 797, 9301, 9610, 10181
  - neutrality 857, 3677, 8710
  - nitrogen-rich 6781
  - oxidation 8293
  - plant-captured 848
  - price 5418
  - rental rate 5412
  - ribbon 9206
  - sequestration 165, 2251, 2254, 4095, 4119, 7268, 7271, 7279, 9605, 9697, 10745, 10961
  - seaweed-based 6783
  - taxes 1570
  - thermo programmed desorption (TPD) analyses 6785
  - carbon trading credit (CTC) 551, 552
  - for electrical double-layer capacitors 6773
  - for pseudo-capacitors 6775
  - heteroatom-enriched 6776, 6781
  - nitrogen-rich 6781
  - seaweed-based 6783
  - capture and storage (CCS) 4120, 4122
    - post-combustion capture 4120
    - costs 1921
    - environmental costs 1922
    - social costs 1922
- carbon-based pseudo-capacitors 6787
  - protic ionic liquids 6787
- carbon dioxide 161, 207, 245, 608–609, 823, 848, 851, 857, 933, 1150, 1152, 1784, 1909, 2149, 2156, 2163, 2166, 2169, 2501, 2757, 3458, 3599, 4120–4122, 4171, 4772, 5297, 6375, 7304, 7329, 8350, 10169, 10482, 10484, 12102
  - atmospheric fluxes 6375
  - capture 2169
    - and sequestration (CCS) 2172
    - and storage (CCS) 4120–4122
  - CO<sub>2</sub>-enhanced oil recovery (CO<sub>2</sub>-EOR) 2157
  - coal-based 2163
  - compression in PC and IGCC plant 2169

- concentration 10391
- costs 1921
  - environmental costs 1922
  - social costs 1922
- emission 608, 654, 933, 1504, 1784, 2166, 2172, 3458, 4121, 5911
  - factor (CEF) 857
- fertilization effect 609, 2757
- in the atmosphere 608
- long-term isolation 2149
- migration 2156
- monitoring and verification (M&V) 2158
- post-combustion capture 4120
- price 5413
  - stabilization 5413
- reduction 2163
- removal 2115–2117, 4108, 10119
- sequestration 162, 1909, 1921, 1922
  - and storage 4689
- splitting thermochemical cycles 9602
- storage 4125
  - mechanisms 2156
- supercritical 10169
- transport 1912
- carbon-negative energy 860
- carbon-sequestering systems 9032
- carbon-support corrosion 7763
- carbon-to-nitrogen (C/N) ratio 1152
- carbonaceous waste 9608
- carbonate 1316
  - aquifer 4796
  - chemistry 7231
  - electrolytes 6724
  - ion 6721, 7234, 7236
  - carbonate ions 6721, 7236
  - minerals 2157
  - molecules 6061
  - rock 1913, 1915, 5646, 5661
  - salts 7897
  - weathering 2118
- carbonate-containing liquid electrolytes 6085
- carbonation 374, 1910, 1919
  - materials 1910
  - modes of application 1910
  - Protic Ionic Liquids 6787
- carbonic acid 2118, 7234
- carbonization 1449, 1527, 2416, 6770
- carbonized rice husks (CRHs) 874
- carbonyl
  - oxygen atom 6063
  - sulfide 8353
- carbonylation 3946
- carbothermal reduction of metal oxides 9596
- carboxylate 11440
  - platform 11450
- carboxylation 3224
- carboxylic acid 2242
- carboxymethylcellulose (CMC) 6092, 6133
- carcinogen 3254, 3258–3259, 3589, 3596, 3600, 3605, 3608, 3610–3612
  - DNA
    - adduct 3259
    - mutations 3600
  - exogenous 3610
  - low-dose effects 3254
  - methylating 3608
  - risk assessment 3258
- carcinogenesis 3255, 3596, 3600, 3644
- carcinogenic agents 3648
  - during puberty 3648
- carcinogenicity 4849
  - DNA adduct 3259
  - DNA mutations 3600
  - exogenous 3610
  - low-dose effects 3254
  - methylating 3608
  - risk assessment 3258
- cardiac pacemakers 6501, 6514
- cardiac resynchronization therapy defibrillator device (CRT-D) 6507
- cardiovascular disease 9656
- Caribbean reefs 2492
- caribou 8448, 8450, 8457, 8462
  - radiation doses 8462
- car-like vehicle 2477
- carnivore 823–825, 827, 831
- Carnot
  - cycle 3385, 3849, 3854, 3927, 4252, 4296, 6817
  - efficiency 5142, 5511, 5538, 6818, 9513, 9592, 9594, 9905
  - heat engine 5519
  - law 1241
  - process 1248, 9413
- Carnot-equivalent cycle 6818
- carotene 7915
  - $\beta$ -carotene 1699, 1705, 1716, 10758
- carotenoid 1699
- carpet recycling 8827, 8830
  - comminution 8830
  - fiber identification 8830
  - separation 8830
  - sorting 8830
- carpools 92, 4952, 5024, 5029
- carp 547
- carragenophyte 9120
- carrying capacity 1931–1932, 1941, 1959, 1961–1962, 1964–1965, 1968, 1970, 1972
  - assimilative capacity 1932
  - decision framework 1970
  - ecological 1962, 1965
  - functional categories 1962
  - management tools 1972
  - modeling 1964
  - physical 1961
  - production 1962
  - social 1962, 1968
  - sustainable bivalve aquaculture 1959
- carsharing 92
- Cartagena Protocol on Biosafety (CPB) 2288, 2304, 4496, 4519, 4520, 4521, 10768
- Cartesian
  - coordinate system 3811
  - radar coordinates 6967
- caryopsis 2542
  - allele 2706
- CASAC ozone panel 233–234
- cascade catalysis 7612
- casein 10855
- cash crops 1228, 1563
- casinghead gasoline 7803
- cassava 990
  - vein mosaic virus 10687
- cast iron 10555
  - stoves 1362
  - mechanical properties 6935
  - thermomechanical properties 6934
- castor oil 6907–6908
  - alcoholysis products 6907
  - bisphenol A propoxylate glyceride maleates 6908
  - maleates 6908
  - monoglyceride maleates 6908
  - oil-based polymers 6934–6935
    - mechanical properties 6935
    - thermomechanical properties 6934
  - pentaerythritol glyceride maleates 6907
- cataclysmic eruption 11624
- catalase (CAT) 4, 3662
- catalysis/catalytic 4609, 7586, 7613
  - chain transfer polymerizations 3945
  - computer-aided molecular design 7613
  - converters 1396
  - cracking 4588, 7832–7833
    - sour wastewater 7833
    - spent process catalysts 7833
  - graphite formation 2942
  - high-throughput experimentation (HTE) 7613



- in chemistry 4609
- membrane reactors (CMR) 3969
- oxidation 7588, 7590, 7594
  - of hydrocarbons 7594
  - propylene to propylene oxide 7590
- ozone loss 10131
- partial oxidation (CPOx) 3968
  - reforming 3967
- post-combustor 5271
- reactions 10563
- reformer gases 7842
- steam reformer (CSR) 7879
- transformations 4585
- two-stage liquefaction (CTSL) 2230
- wet air oxidation (CWAO) 7608
- catalyst 8213
  - dust 7833
  - electrokinetics 373
  - whiskerettes 8213
  - sour wastewater 7833
  - spent process catalysts 7833
  - of hydrocarbons 7594
  - propylene to propylene oxide 7590
- cataract 11412
- catchment 8634–8635, 8637, 8642, 8648
  - contaminants 8635
  - inland water 8642
  - land-surface model (CLSM) 4575
  - migration of radioactive substances 8642
  - radioactive pollution 8635
  - radionuclide concentration 8637
  - storage compartments 8648
  - studies 5823
- catchment-to-tap systems 6624
- catechol 10667
- cathode 709, 729, 740, 752, 3873, 6039, 6068–6069, 6086, 6105, 6127, 6129, 6505, 6733–6734, 9907
  - gas-phase mass transfer 6734
  - Li-ion liquid electrolytes 752
  - materials 6086, 6144
  - nickel metal particle 6105
  - overpotential 6733–6734
  - oxygen reduction reaction 7731
  - ray tube (CRT) 3444
- cathode/electrolyte interface 6060
  - Li-ion liquid electrolytes 752
- cation/cationic
  - exchange capacity (CEC) 875
  - exchange reactions 8608
  - geothermometry 5220, 5222
  - composition geothermometer (CCG) 5221
- cattle 1747, 1752
  - breeding 7973
- cause-effect relationship 3266
- cave 5646, 5661
  - biota 5663
  - mapping 5661
- cavitating fluid (CF) 2763
- cavity
  - receiver 2364
  - thermal energy storage (CTES) systems 4153
  - flexible 1982
  - CdTe solar cell production 1984
- CdTe solar cell 1976–1979, 1981–1983, 1985–1989, 1991–1993, 1995–1998
  - annealing treatment methods 1988
  - As-deposited CdTe layers 1989
  - bifacial 1996
  - buffer layers 1995
  - CdCl<sub>2</sub> treatment 1989
  - CdS buffer 1985
  - CdTe absorber layer 1986
  - CdTe bandgap 1991
  - CdTe deposition techniques 1987
  - CdTe thickness reduction 1992
  - close space sublimation (CSS) 1987
  - electrical back contact 1993
  - electrodeposition 1988
  - environmental, health, and safety issues 1997
  - flexible modules 1982
  - high vacuum evaporation (HVE) 1987
  - industrial production 1981
  - influence of polycrystallinity 1992
  - metal organic chemical vapor deposition (MOCVD) 1987
  - performance stability problem 1996
  - pn-heterojunction 1983
  - processing technology 1979, 1983
  - production 1984
    - highly resistive and transparent layer 1984
  - properties 1983
  - p-type 1978, 1981, 1985
  - resources of raw materials 1998
  - screen printing 1988
  - spray deposition 1988
  - sputtering 1987
  - state-of-the-art 1978
  - superstrate configuration 1996
  - transparent conductive oxide layer 1983
- vapor transport deposition (VTD) 1987
- window layer 1983
- celestite 9950
- Celgard
  - membranes 8730
  - separators 8725
- cell/cellular
  - clones 6525, 10828
  - cultures 6519
    - secondary metabolites 6519
  - death from high-LET radiation 5579
  - fusion 10770
  - genome 10904
  - glasses 11604
  - membrane thermostability 10396
  - metabolic pathways 9656
  - performance and safety 8737
  - effect on cell performance and safety 8737
  - physiology 6532
  - prion protein 2969
  - sorting 647
    - fluorescence-activated 647
    - magnetic-activated 647
  - transfection 10899
  - turnover 3605
  - voltage 742
    - overvoltage 742
    - polarization 742
  - wall biosynthesis 502
- cellobiose 973
- cellulase 972, 973, 8048
- cellulolytic enzyme 8052
- cellulose/cellulosic 963, 1042, 1075–1076, 1105, 1519, 6020, 9824, 11435
  - ethanol 1269, 8048, 10508–10509, 10514–10515, 10752, 11429
    - switchgrass-based 10515
  - fibers 8725
- cement 4872
  - hydration process 2408
  - kilns 5286, 5288
  - production 4871
- cenosphere 3825, 3828
- Central American volcanic belt (CAVB) 11619
- central electricity generation 9935
- central heating
  - boilers 1367
  - kitchen stoves 1365
  - systems 1387–1388
    - efficiency 1387
    - wood-burning 1388
- central limit theorem 398



- central receiver system (CSR) 2350
- central-city redevelopment 10931
- centralized generation 3012
- centralized traffic control (CTC) 5967
- centrifugal collectors 1393
- centrosome 6168–6169
  - inheritance 6168
- Cephalopholis argus* 831
  - biomass 831
  - ciguatoxicity 831
- ceptometer 7923
- ceramic brick 3833
- ceramization 11601
- cercariae 12043
- CERCLA, see also Comprehensive Environmental Response, Compensation, and Liability Act
  - grain quality 4550
  - color 2707
  - quality 2707
  - amylose content 2708
  - ethylene-releasing compound 6210
  - inhibitors of gibberellic acid biosynthesis 6210
- cereal 1111, 2708, 6210, 4552, 6201–6202, 8018, 9151
  - amylose content 2708
  - endosperm 4552
  - ethylene-releasing compound 6210
  - grains 10842
  - crops 1130, 4550
    - grain quality 4550
  - inhibitors of gibberellic acid biosynthesis 6210
  - lodging 6202
    - resistance 6201
  - preharvest sprouting 9151
  - seed 2707
    - color 2707
    - quality 2707
  - water soluble carbohydrates (WSC) 8018
- cerebellar neurodegeneration 2970
- cerebral malaria 11088
- ceria sulfide 2945
- Cerulenin 500
- cesium 8452, 8621
  - cesium–134 3714
  - cesium–137 3712, 3728–3730, 3733–3734, 3738, 3743
    - activity 3728, 3743
    - chronology 3738
    - depth distribution 3729, 3734
    - estimating 3733
    - fallout 3729
    - measurements 3730, 3734
    - post-fallout redistribution 3729
    - redistribution 3728
    - waste 4776
- cestode 12022, 12052
- Cestodes 12022
- cetane number 11430
- chalcopyrite 7968, 9397
  - compounds 9395
    - phase diagram 9397
  - semiconductors 9396
- chamber 4975
- CHAMP (CHALLENGING MiniPayload)
  - satellite 4566
  - mission 4565
- channel
  - erosion 3742
  - siltation 3758
  - tunnel 4940
- chaos theory 2523
- chaotic system 2523
- char 851, 884, 5305, 5313
  - burnout time 5313
  - from solid wastes 5305
  - char gasification 5312, 5314
  - irrigation 884
  - mobility 884
  - soil-water dynamics 884
- charcoal 847–848, 874, 876–877, 879, 1213, 1300, 1322, 1324, 1327, 1352, 1518, 2117, 3427
  - adsorption of phosphorus 876
  - combustion 1322, 1327, 1335
  - environmental 879
- charge-sustaining hybrid 3484
  - burnout time 5313
  - from solid wastes 5305
  - irrigation 884
  - mobility 884
  - soil-water dynamics 884
- checkerboard 11462, 11465
  - plane 11462
- chelation therapy 3260
- chemical/chemicals 2037, 10956–10957, 10955
  - batteries 3367–3368, 5105–5106, 5114
    - energy density 3368
    - practical specific energy 5105
    - specific power 5106
    - theoretical specific energy 5105
  - composition 2410, 11740
    - carbon–nitrogen (C/N) ratio 2410
  - contamination 2259
  - diffusion 10955
  - engineering 4614
  - fate 10956
  - fuel conversion 9937
  - hazard evaluation for management strategies (CHEMS–1) 4860
  - heat storage 10561
  - hydrophobicity 10662
  - importance of mixing 10957
  - in the environment 2016, 2030, 2048, 10954, 10975
    - dispersive transport 2030
    - fate 10954
    - transport 10954
    - transport with jets and plumes 10975
    - turbulent transport 2048
  - interfacial transfer 10956
  - mass 10964
    - rate of accumulation 10964
  - mass balance (CMB) modeling 8889, 8894
  - multiphase transport 10956
  - nitrogen 6771
  - oxidants 3658
  - oxidation catalyst 7587
  - oxygen demand (COD) 9569, 11968
  - pollution 191
  - recycling 8826
  - retardation coefficient 2037
  - reverse osmosis 10955
  - tracers 4209
  - transformation 4644–4645, 4647
    - oxidation reactions 4645
    - protection–deprotection reactions 4644
    - reduction reactions 4647
    - surface-mediated 4644
  - transport 10958, 10962
    - processes 10955
    - resistance 10958
  - turbulent diffusion 10955
  - wastes 4585
  - weathering 1910, 1913
  - weed control with herbicides 10345
- cheminee 1361
- chemisorption 1648
- chemistry-climate model (CCM) 10137
- chemoautotroph 823, 6414
- chemotherapy of malaria 11081
- chernikovite 10413
- Chernobyl accident 3534, 3536–3537, 3585, 3710, 3712, 5592–5593, 5601, 5606, 7008, 7012, 7020, 7029, 7053, 8388, 8409, 8457, 8465, 8498, 8500, 8638, 8667, 10426

- agriculture 3534
  - aquatic ecosystems 3536
  - cooling pond 5598
  - decontamination of settlements 3537
  - effects of remediation 3537
  - effects of radiation 5593
  - exclusion zone 8500
  - experimental results 8638
  - fallout 3713, 3718, 3734, 7005, 8465
    - in Scandinavian watersheds 7005
    - map 7029
  - forest 3536
  - radiocesium 7012
    - concentrations 7029
    - in lakes 7020
  - radiostrontium 7012
  - remediation strategies 3537
  - transport of radionuclides 7008
  - urban ecosystems 3537
    - in Scandinavian Watersheds 7005
- Chernobyl Forum 3528
- exclusion zone 8500
  - fallout 8465
- chicken 639, 640–642, 645
- blastoderm 645
  - embryonic stem cells 645
  - growth rate 8314
  - oocyte 642
  - production 1778
  - retroviruses 642
  - transgenesis 639, 640
  - zygote 641
- childhood 3646–3648
- cancer 3642, 3646, 3648
  - leukemia 3647–3648
- children 3621, 3623–3627, 3629, 3631–3635, 3649
- absorption of chemicals 3626
  - behavioral patterns 3625
  - biotransformation 3629
  - cellular metabolism 3629
  - development phases 3624
  - disease prevention 3624
  - disinfection by-products (DBPs) 3632
  - effects of passive smoking 3632
  - environmental exposures 3649
  - environmental health threats 3622
  - environmental threats 3621, 3622, 3649
  - environmental toxicants 3622
  - exposure patterns 3623
  - hand-to-mouth behavior 3631
  - indoor air pollutants 3626
  - ingestion
    - of nonfood items 3625
    - of pesticides 3631
  - life expectancy 3621
  - mercury-associated effects 3634
  - metabolic pathways 3624
  - metabolic rate 3625
  - microenvironment 3626
  - nervous system 3632
  - neurobehavioral deficits 3635
  - neuropsychological effects 3634
  - neuropsychological testing 3635
  - neurotoxic effects of lead 3633
  - oral exposures to chemicals 3625
  - pollutants 3629
  - rate of oxygen consumption 3625
  - special risks 3622
  - susceptibility 3627
    - to environmental toxicants 3623
  - toxicokinetics 3626
  - vulnerable life stages 3623
- chimney 1251
- effect 9766
  - stoves 1362, 1366
- chitinase 4034
- genes 10697
- chitosan 2576
- Chlamydia trachomatis infection 12011
- Chlamydomonas reinhardtii* 353, 356, 358, 360, 365
- Chlo 2405
- chloracne 5267
- chloraquine 5379
- Chlorella*
- *ellipsoidea* 365
  - *vulgaris* 348, 360
  - *zofingensis* 356
- chloride 1316, 2041, 7330
- fertilization 2563
  - residence time 2041
- chlorinate 10407
- abiotic reductive dehalogenation 10407
- chlorinated
- aliphatic hydrocarbons 10142
  - dioxin 4873
  - chlorinated hydrocarbon 7002
  - hydrocarbons (CHCs) 6990, 7002, 10153–10155
    - biodegradation 10154
    - enhanced bioremediation 10154
    - enhanced biostimulation 10155
    - in situ chemical oxidation 10155
  - molecular growth 7002
  - monitored natural attenuation 10154
  - multiphase extraction 10154
  - soil vapor extraction (SVE) 10154
  - polycyclic aromatic hydrocarbons (ClPAH) 6995
  - VOCs 10153
  - waste 5244
- chlorination 4885, 10535
- chlorine 3911, 4009, 4881, 6996, 9564, 9830, 10135, 11597
- corrosion 1346
  - dosing 6625
  - gas 5252, 10653
  - isomerizations 7002
  - poisoning 3911
- chlormequat 6210
- chloroacetamide herbicide 10350
- chloroalkylation 378
- chlorobenzene 6999
- chloroethene 2435, 2443
- chlorofluorocarbon (CFC) 177, 613, 5860, 7343, 8670, 9710, 10130, 10131
- chlorofluorocarbon–11 2523
- chloroperoxidase enzyme 7597
- chlorophenol (CLPs) 4883, 4887, 6999
- chlorophyll 352–355, 359, 1478–1479, 1949, 2618, 2621, 2624, 2670, 7274, 7915, 7917, 8922, 8925, 8963, 8965–8966, 11381, 11387
- antenna size 355
  - biosynthesis 354
  - empirical algorithms 8963
  - fluorescence 354–355, 359, 2634, 8925
  - primary productivity algorithms 8965
  - satellite-derived 8966
  - semi-analytical algorithms 8965
- chloroplast 354, 358, 366, 1479, 2624, 2644, 2664, 8044, 8047, 8077, 11395
- genome 2606, 4024
  - respiration pathway 358
  - thylakoid membrane 356
  - transformation 365, 2606
- chloroquine 6292, 11077, 11082
- chlororespiration 358, 2444
- Chlorpyrifos 3260, 3586
- choice-set generation 105
- in coastal and estuarine waters 8927
  - lysogenic conversion 5052
- cholera 5052, 5063, 5361, 7385, 12014
- antimicrobial treatment 5063
  - outbreak 8927
    - in coastal and estuarine waters 8927
  - toxin (CTX) 5052
    - lysogenic conversion 5052
  - vaccine 7385
- Cholesky factorization 2473
- cholesterol 1681, 4037
- oxidase 4037
- cholinergic syndrome 3260

- chromate 10410
  - poisoning 3904
- chromatin 2553, 3604, 3608, 6154, 6158, 6171, 10908, 10911
  - modifications 3608, 6158
  - relaxation 6171
  - remodeling treatments 6171
- chrominance 11122
- chromium 4889, 9953, 10410
  - chromium–iron battery 3853
  - oxide 3962
  - poisoning 9872, 9894
- chromophore 7559, 11380–11381
- chromophoric dissolved organic material (CDOM) 8955
- chromosome/chromosomal 478, 483, 488
  - aberrations 3602, 5581
  - instability (CIN) 3606
  - mutations 3606
  - segment homozygosity (CSH) 7979
  - transfer 6156
- chronic alcohol consumption 3589, 3590, 3610
- chronic irradiation 5588
- chronic myeloblastic leukemia (CML) 3602
- chronic obstructive pulmonary disease (COPD) 213
- chrysotile 1924
- chunk rock backfill 5656
- chytridiomycosis 5370
  - in amphibians 5370
  - influence of climate change 5370
- cigar burner 1324
- cigarette smoke 228, 3612, 10638, 10640
  - toxic compounds 10640
- ciguatera 9104
  - fish poisoning (CFP) 827, 828–829, 3592, 7389, 9083
  - biomagnification 829
  - cardiovascular symptoms 828
  - gastrointestinal symptoms 828
  - neurological symptoms 828
- ciguatoxin 827–828, 830, 831, 3592, 3594, 9082
  - biotransformation 830
- CIMMYT wheat genotypes 4074
- cinnabaramide 3163
- circadian efficiency 2829
- circadian rhythm 2828, 10275
- circuit breaker 3001–3002
  - sulfur hexafluoride (SF<sub>6</sub>) gas-insulated 3002
- circular jet 10976, 10980
- circular plume 10988
  - crossflow 10988
- circulating fluidized bed (CFB) 1456, 5124
  - gasifiers 5127
  - incinerators 5278
- circulation model 2098
- circumpolar
  - bottom waters (CBW) 8658
  - deep water (CDW) 5860, 8677
- cirrus cloud 661, 663
- cisgenetic 4497
- cistron 10913
  - co-expression 10913
  - mosaic of biotopes 944
  - producing energy 958
- citrate-dithionite-bicarbonate (CDB) 8606
  - sustainability 6854
- city 942, 944, 953, 958
  - as ecosystems 6856
  - as landscape 942
  - development 6853–6854
    - sustainability 6854
  - environments 942
  - gas 3910, 3916
  - growth 5718
  - intervention programs 5844
  - of biotopes 944
  - planning 952
  - producing energy 958
  - topography 11313
  - transportation 7779
  - water management 4735
  - water structure 953
- city-branding strategy 4689
- city-suburban-exurban systems 11337
- civil aviation 653
- civilian aircraft 6813
- clam digger's itch 12043
- clamshell dredge 3032
- clarithromycin 506
  - waste-to-energy plant 11846
- clathrate hydrates 330
- clathrate 334, 7453
  - hydrates 330
- Claude cycle 7306
- Claus plant 2237
- Clausius Rankine cycle 1241
- Clausius–Clapeyron equation 132, 7248
- Clausthal test facility 6466
  - limitations 4600
- clay 4593–4598, 4600
  - acidic properties 4594
  - aldol condensation 4598
  - alkylation 4598
  - catalysis 4596, 4600
  - limitations 4600
  - dioctahedral 4594
  - esterification 4596
  - etherification 4597
  - interlayer 4594
  - montmorillonite 4598
  - Na<sup>+</sup> exchange 4596
  - pillaring 4595
  - structure 4593
  - sulfonylations 4598
  - supporting materials 4600
  - trioctahedral 4594
- clayzic 4605
- Clean Air Act (CAA) 213, 215, 298, 1392, 7825, 11738
- Clean Air Interstate Rule (CAIR) 10525
- Clean Air Scientific Advisory Committee (CASAC) 217
- clean burning natural gas 331
- clean energy 9743
- Clean Water Act (CWA) 5674, 5827, 6334, 7825
- cleanup dredging 3048
- clear ocean water 11387, 11390
- clear sky option 2826
- Clearfield hybrid 4450
- clear-sky
  - diffuse radiation 10626
  - index 10627
  - values 9751
  - radiation 10624
  - computing 10624
- Clementsian succession 3288
  - sustainability science 3288
- clerestory window 2811, 2823
  - atmospheric aerosol 144
  - change 636
  - consultant 899
  - direct aerosol influence 141
  - dynamics 3212
  - effects of air traffic 653
  - erosivity 163
  - forcing 632
  - models 624, 637
  - of a region 8906
  - problems 626
  - random variability 3345
  - response 632
  - seamless models 12076
  - sensitivity 633
  - top-down solar forcing 9808
- climate 141, 144, 163, 624, 626, 632–633, 636–637, 653, 899, 2062, 3212, 3345, 8906, 9808, 12076
  - anomalies 2128
  - atmospheric aerosol 144

- change 112, 310, 348, 636, 849, 1489, 1506–1507, 1545, 1558–1560, 1567, 1784, 2061–2064, 2066–2071, 2078, 2084, 2095, 2097, 2099, 2114, 2118, 2149, 2319–2320, 2324, 2345, 2455, 2502, 2633, 2756, 2932, 3207, 3209, 3707, 4110, 4121, 4673–4674, 4676–4678, 4680, 4689, 4722, 5358, 5366–5367, 5369, 5398, 5419, 8013, 8880, 10391, 10749, 11354, 11692
  - adaptation of cities 4678
  - agricultural productivity 10749
  - anthropogenic-related 2502
  - ASCCUE project 4680
  - assessment 5419
  - business perspective 2070
  - CO<sub>2</sub>-induced 2099
  - crop growth 2633
  - definition 2062
  - disease in wildlife 5367
  - earth system 2509
  - ecosystems 2068
  - effect on water resources 2324
  - effects on crop plants 10391
  - effects on epidemiological dynamics 5367
  - effects on infectious diseases 5358
  - emergence of new diseases 5367
  - future effects 2064
  - geoengineering 2118, 4110
  - global water sustainability 2061, 2067
  - green infrastructure 4673
  - greenhouse gases 2068
  - harmful algal blooms 2084
  - human activities 2320
  - human-induced 2149
  - impact on industrial sectors 2071
  - impact on marine animals 5369
  - impact on water quality 2066
  - impacts on emerging contaminants 2078
  - indicators 2068
  - indicators by USEPA 2063
  - integrated assessment model (IAM) 5398
  - intergovernmental panel 4677
  - mitigation 4689
  - modeling methodology 2095
  - observational records 2320
  - oceans 2068
  - ocean acidity 2069
  - plant breeding 8013
  - projections 2097
  - remediation 2114
  - response 1559
  - science 3209
  - sea level rise 2069
  - sea surface temperature 2069
  - signal 8914
  - snow and ice 2068
  - society 2068
  - urban areas 4676
  - urban vulnerability 4676
  - urbanization 4674
  - weather and climate 2068
- CO<sub>2</sub>-induced 2099
- consultant 899
- convention 1542, 1544
- direct aerosol influence 141
- dynamics 3212
- effects 9795
  - of air traffic 653
  - solar-induced 9795
- engineering 4105, 4112
- erosivity 163
- forcing 632, 5415
- forecasts 2067, 2120, 2129, 2523
  - tercile classes 2129
- gas balances 1134
- gas emissions 1135
- intervention research 4113
- intervention technology 4112, 4113
- model 623, 624, 637, 2102, 2106, 2109–2112, 2140, 2510, 2513–2517, 2520, 5419, 5865, 7367, 9735, 10125, 10162, 12069
  - coupling socioeconomic models 2112
  - ensemble Kalman filter 2111
  - European modeling centers 2140
  - fully coupled simulations 2515
  - globally averaged surface temperature 2520
  - independence 2106
  - interactive carbon cycles 2513
  - model emulator 2109
  - model equality 2109
  - model error 2111
  - model tuning 2109
  - model validation 2517
  - multi-model ensembles 2106, 2109, 2112
  - parameterizations 2102
  - perturbed physics ensemble 2110, 2112
  - representative concentration pathway (RCP) 5419
  - simulation 2112, 2514
  - tuning 2106
  - validation 2106
- globally averaged surface temperature 2520
- independence 2106
- interactive carbon cycles 2513
- multi-model mean 2106
- tuning 2106
- validation 2106
- monitoring 4925
- of a region 8906
- prediction 2104, 2119, 2123, 2128, 2130–2135
  - Brier skill score 2133
  - climate variability 2132
  - data assimilation 2128
  - decadal 2135
  - dominant drivers 2135
  - forecast skill 2132
  - internationally coordinated efforts 2134
  - limit of predictability 2133
  - multi-model ensembling 2131
  - one-tier forecasts 2128
  - systems 2128
  - recalibration 2131
  - reliability diagram 2130
  - seasonal-to-decadal 2119
  - super-ensemble 2104
  - two-tier forecasting 2128
- decadal 2135
- dominant drivers 2135
- super-ensemble 2104
- problems 626
- quality 9035
- random variability 3345
- regime 4110
- response 632
- risks 2067
  - for water infrastructure 2067
- science 623, 2096, 2099
- sensitivity 633, 1560, 2107, 2111, 5859, 5871
- seamless models 12076
- simulations 2101, 2103, 12064
  - multi-model ensembles (MMEs) 2103
  - perturbed physics ensemble (PPE) 2103
- system 2129
  - butterfly effect 2129

- top-down solar forcing 9808
- variability 2120–2121, 2123, 2125–2126, 2128, 2145
  - decadal prediction 2120
  - seasonal-to-interannual 2125–2126, 2128
- zones 9647
- climate-based daylight modeling 2832, 2841
- climate–soil interaction 153
- climate-species matrix 11355
- climatology 8911
  - simulations 8911
- climax
  - community 3281–3282
  - vegetation 3279, 3282
- clindamycin 502
- clinical trials in humans 8066
- clinoptilolite 8622
- cloned animals 6170
  - perinatal/neonatal care 6170
- cloned embryo 6171–6172
  - aggregation 6172
  - chromosomal abnormalities 6171
  - community effect 6172
  - epigenetic embryo complementation 6172
  - RNA interference 6172
- cloning 2691, 2965, 6150, 6157, 6167, 6173, 6525, 7218, 10820, 10865, 10908, 10910, 10918
  - definition 6150
  - efficiencies 6167, 6172, 6173
    - RNA interference 6172
  - insulators 10910
  - map-based 2691
  - problems 6157
- close-coupled integrated two-stage liquefaction (CC-ITSL) 2232
- closed absorption systems 9516
  - in refrigeration 9516
- closed cooling tower 9534
- closed cycle heat-driven chiller 9515
- closed landfill 5743, 5744
  - energy generation 5743
  - solar energy 5743
  - wind energy 5744
- closed loop system 4144, 4150–4152
  - aquifer-based system 4151
  - recycling 2400
  - surface water system 4152
  - water-based systems 4150
- closed population 410
- closed reproduction 396
- Clostridium perfringens* 6323, 6326
- cloud 629–630, 634, 661, 667, 9630, 9633, 9697, 9699, 9701–9702, 9716, 9718, 9809, 11152
  - aircraft-induced 667
  - albedo 9633
    - control 9702
    - effect 9809
    - enhancement 9696
  - aviation-induced 661
  - cirrus-type 9718
  - climatologies 8910
  - condensation nucleus (CCN) 630, 6747, 8899, 9697
  - cosmic ray modulation 9809
  - coverage 9699
  - droplets 138
    - activation 132
    - formation 661
  - drops 9701
  - earth's radiant energy system (CERES) 8910
  - feedback 634
  - glaciation 139
  - in climate models 630
  - information 9633
  - nuclei 134, 138
  - optical depth (COD) 9633, 9718
  - parameterization 629
  - patterns 9754
  - seeding 4106
  - super-parameterization 629
- cloud-aerosol lidar and infrared pathfinder satellite observation (CALIPSO) 322
- cloudiness 659, 9749
  - aviation-induced 659
  - albedo effect 9809
  - cirrus-type 9718
  - condensation nucleus 9697
  - cosmic ray modulation 9809
  - in climate models 630
  - super-parameterization 629
- clupeiform fisheries 3577
- Cnidaria 12046
- CO emission 1390, 1397
- coaction 3281
- coagulase-negative staphylococci (CoNS) 5061
- coal 1356, 2164–2166, 2168, 2173–2174, 2176–2177, 2179–2191, 2194–2198, 2200–2204, 2206–2207, 2217, 2223–2224, 2226, 2235, 2237, 2283, 3824, 3846, 5162, 6649, 8350
  - ash 3822–3823, 3837
    - potential health issues 3837
  - as an energy source 2164
  - bed methane (CBM) 6807, 7451
  - boilers 2283
  - bottom ash 11702
  - burning steam turbine 6806
  - carbon-to-hydrogen ratio 8350
  - centrifugal dewatering 2203
  - char 8352, 8354
  - combustion 2172, 5304, 8349–8350
    - air pollutant emissions 8350
    - air pollution 8349
    - by-products (CCPs) 3822
    - products 11705
  - cleaning 2200
    - characteristics 2195
  - coal workers' pneumoconiosis (CWP) 6652
  - consumption 6649
  - coprocessing 2235
  - dense medium separators 2200
  - dewatering 2203
  - dust 6652
    - particles 2283
  - excavation 6649
  - filtration dewatering 2204
  - float–sink analysis 2195
  - fly ash 3837, 11702
  - for electricity generation 3824
  - formation 2176
  - froth flotation separators 2202
  - fuel 2218
  - future production 2188
  - future supply 2173
  - gas 3915
  - gasification 2168, 2224, 2237, 5162, 5280, 6681, 6722, 6838
    - combined cycle 2172
  - gasifiers 1457
  - generation 12183
  - global resources 2173, 2176
  - grinding 2166
  - liquefaction 2226
  - mechanized mining operations 2197
  - mine/mining 2181, 2187, 6649–6652, 6654, 6671
    - air pollutants 6654
    - gas 6807
    - impacts of dust 6652
    - methane (CMM) 6651, 6807, 7451
    - methane emissions 6654
    - methods 2188
    - pollution of air 6651
    - pollution of water 6652

- pollution 6650
- wastes 6669
- occurrences 2177
- plants 9445
- power production 12120
- power station 1436, 2208, 12099
  - co-firing 1436
  - fine particulate emissions 2208
  - postcombustion technologies 2208
- preparation 2194, 2200, 2205–2206, 2208–2217
  - air quality 2216
  - air toxics 2209–2210
  - beneficial impacts 2206
  - clarification 2205
  - cleaning of fine particles 2211
  - control 2214
  - conversion processes 2217
  - dewatering of fine particles 2212
  - dry processing 2217
  - dust 2216
  - greenhouse gas emissions 2211
  - on-line analysis 2214
  - pollution abatement 2208
  - process water quality 2215
  - sizing of fine particles 2213
  - slurry disposal 2214
  - solid–liquid separation 2213
  - storage 2205, 2214
  - sulfur 2209
  - technical issues 2211
  - thickening 2205
  - waste disposal 2205
- processing
  - operations 2196
  - technologies 2194
- production 2186, 2190, 2191, 2207
  - curve 2189
  - economics 2207
  - forecast perturbations 2190
  - limitations 2190
- pyrolysis 5162, 7475
- quality 2195
- recoverability 2180, 2185, 2191
- recovery 2195
- reserve 2180–2181, 2183, 2185, 2206
  - classifications 2179
- resources 2180–2181, 2191, 2223, 3846
- seam gas (CSG) 7451
- sizing 2198
- smoke 207
- spiral concentrator 2201
- storage 2217
- stripping ratio 2184
- thermal dewatering 2204
  - tonnage estimates 2179
  - transportation 2207
  - transporting 2195
  - utilization 2165
  - washability 2195, 2206
  - washing 2217
  - water-based separators 2201
  - water slurry 2238
  - world production 2182
- coal-char stabilization 2218
- coal-fired boiler 8352
  - flue gas 8352
- coal-fired power plant 3824, 8354, 8356, 8359, 8361–8367, 8485, 12102
  - air pollutant emissions 8367
  - combustion modification technologies 8362
  - dry flue gas desulfurization 8361
  - electrostatic precipitator 8354
  - fabric filter baghouse 8356
  - low-NO<sub>x</sub> burners 8363
  - NO<sub>x</sub> emissions control technologies 8362
  - overfire air 8363
  - postcombustion technologies 8362
  - radioactivity 8485
  - reburning 8364
  - selective catalytic reduction 8366
  - selective noncatalytic reduction 8365
  - SO<sub>2</sub> emissions control technologies 8359
  - wet flue gas desulfurization 8359
- coalification process 1213
- coal-to-chemical plant 2153
- coal-to-diesel (CRD) plant 2244
  - carbon dioxide 2250
  - environmental factors 2250
- coal-to-liquids (CTL) technology 1585, 2223, 2250, 3971
  - carbon dioxide 2250
  - commercialization 2253
  - environmental factors 2250
  - life cycle analyses 2254
  - utility water 2252
  - commercialization 2253
- coastal
  - aquaculture production 10319
    - sustainability issues 10319
  - area 7034, 7036, 7038, 7039
    - A-sediments 7039
    - digital elevation model 7034
    - radiocesium 7038
    - ranking of fluxes 7036
    - water exchange 7034
  - A-sediments 7039
- climate 2081
- community 2264
- ecosystem 540, 1967, 2258–2259, 7231
  - sustainable management 2258
- environments 2263
  - degradation 2263
- eutrophication 9117
- finfish aquaculture 7265
- fish farming 514
- marine spatial planning (CMSP) 7265
- model 7034, 7036, 7043
  - mass-balance model 7043
- morphometry 7033
- radioecology 7032
- remote sensing 8932
- resources 592
  - overexploitation 592
- security 2264
- storm 3316
- tourism 7391
- upwelling 7238
- waters 8759, 8761, 8763
  - fecal contamination 8763
  - indicator bacteria 8761
  - pathogens 8759
- cobalamin 1684
- cobaloxime 5203, 5212
- cobalt 172, 712, 715, 757, 2242, 3774, 3975–3976, 4888
  - catalysts 3975
  - oxide 7548
  - sulfate 6941
- Cobb–Douglas production function 1557
- cobia 588
- cocaine 3590, 10643–10644
  - addiction 10644
- Coccidiasina 12048
- coccolithophore 7235–7237
- coccolithophorid 6375
  - phytoplankton 8956
- co-combustion 1609, 2270, 2272–2274, 2276–2283, 11793
  - ash formation 2279, 2282
  - Berlin case study 2282
  - corrosion 2276, 2281
  - emissions 2277, 2282
  - erosion 2276, 2281
  - flue gas
    - denitrification 2278
    - desulfurization 2278
  - fouling 2276, 2281
  - in dust-fired systems 2273
  - in fluidized bed systems 2280
  - of biomass 2272
    - in coal-fired systems 2274

- of sewage sludge 2278–2279, 2282
- of straw 2281
- of wood 2270, 2283, 2284
  - economic efficiency 2284
- slagging 2276, 2281
- utilization 2282
- with lignite 2280
- cocultivation 558, 1928
- cocurrent gasifier 1453, 1454
- Codex Alimentarius 2314
- codworm 12035
- Cody-Collins optical gap 9252
- coercive field intensity 25, 27
- COEX™ process 7147
- coexistence mechanisms 10071
  - competition-based 10071
  - predation-based 10071
- co-fermentation 977
- co-firing 1245, 1284, 1609, 2272
  - in coal plants 1284
- cogeneration 1403, 6833
  - directive 8082
  - efficiency 6833
  - installation 1403
  - cogeneration plant 6831, 6833, 8095
    - heat-to-power ratio 6833
  - system 1033, 1402
- cogging torque 45
- cognition network technology (CNT) 6800
- cognitive ability 3136
  - age-related declines 3136
- cognitive distraction 3112
- cognitive vehicle 2467–2469, 2476
  - cooperative decision making 2476
  - cooperative driving 2476
  - distributed negotiation protocol 2469
  - warning systems 2476
- coke 1352
- coking 7832
- cold crucible induction melting (CCIM) 11586
- cold fusion 7170
- cold heavy oil production with sand (CHOPS) 7818
- cold production 9510, 9512, 9517, 9534
  - buffer storage 9534
  - evaporator 9517
  - mechanical vapor compression 9510
  - thermally driven 9512
- cold seawater 7314
- cold storage 10559
- cold water
  - coral reefs 6413, 6415
  - threats 6415
- fish 5698
  - oxythermal habitat 5698
- cold-crucible induction melter 11589
- coleoptera 4016, 4030, 4033
- coleoptile 8020
- coliform bacteria 6324
- coliphage 8765
- collapse 5650
  - of highways 5650
- collector 2202
- Colletotrichum graminicola* 1277
- collision
  - avoidance (CA) 71, 2471, 2483
  - detection 3140–3142
    - in fog 3140
    - sensitivity 3142
  - simulated foggy effect 3141
  - mitigation system 84
  - collision sensor 66
  - warning (CW) 71, 2476
- collision-coalescence efficiency 139
- colloid/colloidal
  - filtration theory 7683
  - material 7679
  - organic carbon (COC) 8395
  - organic matter (COM) 10539
- colon cancer 1189
- color filter material 11116
- color image 11120
  - sensor 11116, 11117
    - light sensitivity 11117
  - signal saturation 11120
- colored dissolved organic matter (CDOM) 8924, 8926, 8962, 8964
- colorimetric calibration 11119
- comb-branch
  - copolymer 6052
  - polymer 6052
  - polyethers 6051
- combinatorial biochemistry 6520
- combined ash 11738
- combined cycle gas turbine (CCGT) plant 3849
- combined cycle power plant (CCPP) 3849
- combined heat and power (CHP) 1400, 1494, 1662, 3462, 4312, 7867, 7876, 8081, 9886, 9916, 9973, 11768
  - cycle 9528
  - generation 1436, 4763, 9936
    - producer gas 1436
  - process 1210
  - production 1427, 1446, 12121
  - system 1033, 1404–1405, 1407–1412, 1415, 1417, 1420, 1422–1423, 1609, 1611, 3873, 5301, 6831, 7711, 9520
- electrical efficiency 1420
- engine-driven 1404
- hot-air turbine 1410
- internal combustion engines 1404
- inverse gas turbine 1411
- market-ready plants 1415
- micro gas turbines 1412
- pilot plants 1417
- private household sector 1422
- small business and community facilities 1423
- steam piston engines 1405
- steam screw-type engine 1407
- steam turbine 1409
- stirling engine 1408
- combined heat and power (CHP) plant 1200, 1234, 2271, 4154, 8082–8083, 11781
  - electricity output 11781
  - internal combustion engine 8083
  - oil-fuelled 8082–8083, 8087, 8089–8094
    - asynchronous generators 8092
    - combustion engine 8089
    - economic efficiency 8093
    - electrical connection 8091
    - emissions 8093
    - emission reduction 8090
    - exhaust gas pipe 8091
    - exhaust gas recirculation 8090
    - fuel system 8089
    - generator 8091
    - heat exchanger 8092
    - heat generation costs 8094
    - operation 8092
    - peak load boilers 8092
    - planning 8092
    - synchronous generators 8092
    - technical fundamentals 8087
- combined single- and double-flash station 4299
- combined solar dryer 9488
- combined thermal epithermal neutron (CTEN) method 7209
- combustible liquid wastes 5246
- combustion 1210, 1234, 1240–1242, 1254–1255, 1260–1261, 1302, 1304, 1313, 1318–1320, 1325, 1332, 1335, 1352–1356, 1358, 1380, 1383, 1386, 1389, 1396, 1404, 1446, 1448, 1610, 2153, 2171, 2275, 2279, 4960, 5237, 5241, 5246, 5254–5255, 5262, 5282, 5302, 5308, 5312, 5514, 6461–6463, 6467, 6474, 6841, 6848–6849, 10482–10483, 11442, 11787, 11852
  - adjustment of fuels 1383
  - aerosol formation 1335



- air 1412, 2166, 5237, 5249, 5254, 5272, 5275–5276, 6462, 6838, 8364, 11711, 11856
  - flow 6474
  - preheating 5254
  - requirements 11825
  - system 4966, 6461
- air-blown 2171
- annual efficiency 1389
- ash utilization 2279
- ash-forming elements 1318, 1335
- ash-related problems 1332
- biomass-fueled 1396
- boilers 1242
- chamber 1319, 1320, 1380, 4963, 5258, 5262, 5265, 5271, 5273, 5275
  - air supply 5275
  - corrosion problems 5265
  - flow patterns 5258
  - residence time 5262
  - rotary kiln incinerators 5273
  - shaft furnaces 5273
  - stationary furnaces 5271
  - underfeed stoker units 1320
- char burnout 5308
- closed-looped steam cooling 6848
- control 4958, 4972, 6467, 6468
- cooling down effect 1353
- devolatilization 5308, 5312
- efficiency 1354, 1386, 5510
- engine 1224, 3856, 9909
- engineering 11795
- firing temperatures 6841
- FLIC code 5302
- FLUENT code 5302
- fluidized bed combustors 1254
- furnace types 1355
- gas 1356, 1358, 6838
- gaseous emissions 1332
- grate 4964–4966, 6454, 11771
  - air-cooled block 4965
  - block rows 4965
  - module 4965
  - water-cooled blocks 4966
- grate-fired combustors 1254
- heat transfer 1304
- industrial technologies 1319
- internal 1404
- kinetic modeling 5514
- mathematical modeling 5302
- medium and large-scale industrial 1320
- modification technology 8363–8364
  - low- $\text{NO}_x$  burners 8363
  - overfire air 8363
- nitrogen oxides 5241
  - of flammable gas 5246
  - of hydrocarbon fuels 10482
  - of municipal refuse 11787
  - of solid biomass 1313
  - of solid waste 5236
  - of sulfur 10483
  - of volatiles in the porous bed 5308
  - oxyfired 2153
  - oxygen-enriched air (SYNCOM) 6463
  - plant 1337
  - process control optimization 1260
  - products 5262
  - combustion profile 4973
  - pulverized fuel combustors 1255
  - re-burning 1261
  - recirculation of flue gas 6462
  - requirements 1352
  - residues 5237, 11787
  - science 5246
  - small-scale (domestic) 1320
  - staged-air 1261
  - submerged 5282
  - system 1352, 6450
    - biomass-fueled 1352
  - technology 1260, 1320, 1325, 6461
    - dust combustion 1320
    - fixed-bed combustion 1320
    - fluidized bed combustion 1325
    - fluidized bed furnace 1320
    - pretreatment systems 1320
  - temperature 1304
  - thermal cycles 1241
  - time 1304
  - train 4960
  - turbulence 1304
  - underfeed rotating grate 1325
  - volumetric heat release rate 5255
- combustion-generated particles 6999
- commercial
  - air traffic 653
  - fisheries 3576
  - gas diffusion 8187
  - livestock industry 1774
  - nuclear power 8482
  - recycling 3445
    - techniques 9613
  - satellites 8928
  - solar thermal power 10567
- commercialisation of GM crops 2286
- communications network 2984
- communication-based train technology (CBTC) 1897
- community 3278
  - atmosphere model (CAM) 624
  - climate system model (CCSM) 2512
  - dynamics 3278
  - earth system model (CESM) 5424
  - ecology 3298
    - competition 3298
    - predation 3298
  - forest program 11351
  - of practice (CoP) 6704
    - crop-based 6704
- commuter rail 1900, 6006
  - line 5983
  - services 5963
- commuter railroad 1812
- compact city 4675, 5789, 5840
- compact reforming 3963
- compactness index 11269
- competition 10063–10064, 10068–10069, 10077, 10079–10080
  - chemical interference 10079
  - equalizing mechanisms 10069
  - exclusion principle 10068, 10069
  - feedback loops 10064
  - interspecific 10064
  - intraspecific 10064
  - relative nonlinearity 10077
  - spatial partitioning 10077
  - stabilizing mechanisms 10069
  - temporal partitioning 10077
- competition–colonization trade-off hypothesis 10078
- complete combustion 1397
- complex urban junction 11285
- composite electrode capacitors 798
- composite sustainability indices 9187
- compost bioreactor 6662
- composting 1238, 1632, 4958, 8772, 9980, 9984, 10031, 11657–11658, 11833
- compound
  - fertilizers 3772
  - nucleus 3801, 3802
  - parabolic concentrators (CPCs) 9583
- comprehensive environmental response and liability information system (CERCLIS) 2009
- comprehensive environmental response, compensation, and liability act (CERCLA) 2004, 2007–2014, 7826
  - agriculture street landfill project 2012
  - applicable or relevant and appropriate recommendations (ARARs) 2010
  - basic elements 2007
  - Brownfields revitalization act 2014
  - citizen roles 2008
  - criticisms 2013
  - defenses against liability 2011
  - enforcement tools 2012



- environmental health 2004
- liability scheme 2010
- original CERCLA 2007
- priority list of hazardous substances 2010
- remediation priorities 2009
- SARA revisions 2008
- small business liability relief 2014
- states and local governments 2012
- sustainability 2004
- compressed natural gas (CNG) 268, 1881, 5462, 5470, 5484
- compression ignition combustion 5525
  - glow plug 5525
- compression ignition engine 931, 5488, 5503, 5526–5527, 5531, 5539, 6809
  - catalyst 5531
  - diffusion heat release 5527
  - fuel injection 5526
  - multi-injection strategies 5527
  - net soot release 5531
  - non-petroleum fuel 5488
- Compton scattering 3804, 5561, 8542
- computational atmospheric acoustics 12285
- computational fluid dynamics (CFD) 6479–6480, 6884, 8211
  - simulation 6480
- computer 3446, 3447
  - life cycle 3447
  - monitor 3444
  - take-back programs 3446
  - vision sensors 11456
  - vision system 11459–11460
    - three-dimensional (3D) LIDAR-based calibration 11459
    - two-dimensional (2D) planar-based calibration 11460
- concatemerization of plasmids 2603
- concentrated acid hydrolysis 966
- concentrating cooker 9493
- concentrating photovoltaics (CPV) 7938, 7942, 7947, 9419
- concentrating receiver system (CRS) 2349, 2352, 2366, 2369–2372, 2377, 2381–2384, 2387
  - absorption cooling 2383
  - commercial 2377
  - desalination 2382
  - ecological balance 2352
  - examples 2372
  - future cost development 2384
  - high flux receiver 2387
  - hybridization 2371
  - investment costs 2383
  - LEC 2384
  - power production 2352
  - regenerators 2370
  - research facilities 2372
  - secondary uses 2381
  - storage 2369
  - tower constructions 2366
  - under construction 2381
  - under development 2381
- concentrating solar power (CSP) 7620, 9740
- concentration polarization 2916
  - equation 10532
- concentration unit 2026
- conceptual knowledge 4535
- concrete 3830, 8550
  - blocks 3834
  - community 3278
  - mix 2404
  - shield material 8550
- condensate pump 4289
- condensation nucleus 9699
- condensation system 1395
- condensed phase composition process 11320
- condenser 4981
  - analysis 4263
- condensing boiler technology 1388
- conditioning strategy 4133
- conditioning system 3685
  - mixed-mode 3685
- conducting polymer 797
- conductivity-temperature-depth (CTD) sensor 4913
- cone
  - penetration test 7429
  - snail toxin 3165
  - spring ecosystem 3311
- congenital rubella syndrome 5349
- congestion pricing 5022
- coniferous forest 5822
- conjugation 2584
- conjunctivitis 12012
- connectivity-aware routing (CAR) 11572
- Conrad recycling process 1524
- conservation
  - agriculture 162, 5625
  - biology 3203, 3359, 10078, 10080
  - hatcheries 6387
- conserved orthologous set (COS) marker 6429
- consolidated bioprocessing (CBP) 977
- constant current (CC) 678
- constant flux, constant sedimentation rate (CFCS) model 3737
- constant initial concentration (CIC) model 3738
- constant rate of supply (CRS) 3738
- constructed wetland 1633, 10102, 10190, 11892–11893, 11895–11898, 11901, 11903, 11906, 11929
  - for various types of wastewater 11903
  - for wastewater treatment 11893
  - phosphorus removal 11906
  - with emergent macrophytes 11896
  - with floating mats of emergent macrophytes 11897
  - with floating-leaved macrophytes 11895
  - with free water surface 11893
  - with free-floating macrophytes 11893
  - with horizontal subsurface flow 11898
  - with submerged macrophytes 11895
  - with subsurface flow 11897
  - with vertical subsurface Flow 11901
- construction 2391–2392
  - planning 2423
  - process 2392
  - waste 2391, 2395–2397, 2399–2400, 2402, 2412, 2414, 2417–2418, 10007–10008
    - accidental waste 2395
    - asbestos 2417
    - characterization 10008
    - classifications 2396
    - composition 2396
    - dust 2417
    - energy recovery 2414
    - environmental hazards 2417
    - generation 10007
    - leaching 2418
    - managing 2397
    - metallic materials 2396
    - mineral fraction 2397
    - organic materials 2397
    - polymer components 2412
    - predictable waste 2395
    - recycling 2400
    - reduction 2399
    - reuse 2399
    - separation process 2402
    - sustainability issues 2417
    - sustainable management 2418
    - wastewater 2418
  - work 11700
    - wasted materials 11700
- construction and demolition (C&D) materials 8795, 11700, 11705
- consumer–resource relationship 10063
- consumption footprint 9029
- consumption waste 10004
- containment technology 2450

- contaminant 2437–2438, 3045, 3266, 3269, 3274, 3518, 3708, 8636, 8645, 9080, 9136, 10143, 11229
  - biological degradation 10143
  - biomarkers 3274
  - chemical form 2438, 9080
  - cloud deposition 8636
  - control of upstream sources 3045
  - dry deposition 8636
  - effects on organisms 3266
  - exposure route 3269
  - exposure time 3269
  - in the environment 3518
  - mass balance equation 8645
  - organismal characteristics 3269
  - seafood-associated biological 9080
  - speciation 2438
  - toxicokinetic models 3274
  - transfer 7680, 7681, 7683
    - rapid pathways 7680
    - slow pathways 7683
  - transport
    - in groundwater 2437
    - models 9136
- contaminated
  - areas 3545
    - decision-aiding techniques 3545
  - ecosystem remediation 8532
  - groundwater 7077
  - sediment 3031, 3038
    - dredging 3038
  - soil 2430–2431, 2437
  - soil remediation 2431, 2437, 2450
    - emerging trends 2450
  - surface water 7077
  - water 3587, 9566
    - consumption 3587
- contamination 2439–2440, 3516–3517, 3522, 3525–3526
  - countermeasures 3517
  - in trees 3526
  - international terminology 3517
  - of drinking water 1639, 7045
  - of the environment 3516
  - optimized remediation strategy 3522
  - pathways 3525
  - remediation 2440
  - risk assessment 2439
- contingency reserve 12104
- continuous emission monitoring system (CEMS) 183, 259, 4960, 11696
- continuous stirred tank reactor (CSTR) 3938
- continuous variable transmission (CVT) 11546
- contrail cirrus 662–663, 668
- contrast sensitivity 3143
  - Pelli Robson test 3143
- control law 52
- controllable network transformer 9353
- controlled cooking test (CCT) 1306
- controlled flux technique (CFT) 603
- convection
  - dispersion equation (CDE) 8620
  - transport 2060
- convective
  - available potential energy (CAPE) 140
  - flux rate 10964, 10965
  - hydrothermal resources 4165
  - transport terms 10967
- convector 4375
- Convention on Biological Diversity (CBD) 4519, 4522, 5555, 10768
- conventional breeding 1691, 2650, 2734
  - new tools 2734
- conventional fuels 11430
- conventional spark ignition engine 5540
  - homogeneous mixture 5540
- convergence criterion 2110
- conversion 1240, 1247–1248
  - chemical into thermal energy 1240
  - combustion boiler 1369
  - electrode 729
  - from mechanical to electrical energy 1248
  - from thermal to mechanical energy 1247
  - plant 1588
    - CHP-F method 1588
    - overall efficiency 1588
  - technologies 1205, 1609
- conveyor 4970
- conveyor belt 2514, 5867, 5868
- cook kit model 9502
- cooker 9490–9491
  - concentrating-type 9491
  - hot-box type 9490
  - hybrid 9491
  - vapor-type 9491
- cooking 1301, 9490
  - combustion chamber 1364
  - energy 9490
  - firewood 9490
  - of food 9489
  - plate 1364
  - temperature 9490
- cookstove 1299–1300, 1302, 1305–1307
  - biomass-fueled 1299, 1302, 1307
  - efficiency 1302, 1305
  - impact on global warming 1307
  - indoor air pollution 1307
  - percent heat utilized (PHU) 1306
  - wood-fired 1306
- cool roofs 3693, 4718
- cooling 9509, 9512, 9521
  - closed adsorption systems 9521
  - coil 9528
  - effect 139, 908, 2116, 4680
  - energy 4690
  - facility 1249
  - heat-driven 9512
  - magma bodies 4184
  - networks 4763
  - system 9525, 9529, 9532, 9536, 9549
    - experiences 9549
    - open liquid desiccant systems 9529
    - open solid desiccant systems 9525
    - solar-assisted 9532
    - useful solar heat 9536
  - tower 9546
- cooperation among cognitive vehicles 2464
- cooperative driving 2476
- cooperative motion planning 2480, 2482–2483
  - elastic bands 2483
  - mixed-integer linear programming 2482
- coordinator vehicles 2469
- copepod fecal pellets 8396
- COPERMA monomer 6932
- COPERMA-styrene polymers 6931
- Copernicus' heliocentric model 2100
- copper 4889
  - chromium arsenate 3631
  - deficiency 1687
  - indium
    - diselenide 8381
    - gallium diselenide 9436
  - phthalocyanine 7574
  - sheet 12193
- copper-ceria 2942–2945
  - catalysis 2944
  - conductivity 2943
  - poisoning 2945
  - stability 2945
- coprocessing with coal 2235
- co-pyrolysis 2415
- coral 2493, 2504–2506
  - host cell 2493
  - physiology 2505
  - polyp 2492
  - population dynamics 2504
  - restoration 2505–2506
  - transplants 2506
  - triangle 2496, 2500

- coral reef 2489, 2490, 2492–2498, 2502–2504, 2507, 3151, 3231, 3563, 6188, 6410
  - biodiversity 2495
  - biology 2492
  - communities 2507
  - destruction 6188
  - distribution 2490
  - diversity 2498
  - ecological goods 2498
  - ecology 2492
  - ecosystem 2489, 2496, 2502, 2503, 3231, 6232
  - fisheries 2496
  - geology 2490
  - management 2503
  - optimal environmental requirements 2494
  - physical connectivity 2497
  - services 2498
  - threats 6188
  - water quality 2504
- coral-alga symbiotic complex 2494
- coral-zooxanthellae complex 2490
- co-refining 1221
- Coriolis
  - effects 6593, 7341, 11264, 11266, 11276
  - flowmeter 4205
  - force 2774
  - parameter 11265
  - term 12072
- corn 351, 4463
  - ethanol 10508, 10514
  - production belt 4444
  - rootworm resistance 4463
- corn-boring pest 4452, 4454
  - insecticide 4454
- coronal mass ejection (CME) 8577
- corporate imaging 8777
- corrosion 1344, 1462
- cosmic ray (CR) 8472, 8473, 8561, 8565, 8622, 8577
  - flux 3716
  - ray-cloud connection 9809
- cosmogenic
  - environment 8473
  - isotopes 9803, 9811
    - solar-induced variations 9811
  - radiation 8470
  - radionuclides 8565, 8656
- cost
  - of electricity (COE) 6845
  - of solar electricity 9412
- cost–benefit analysis (CBA) 4789
- cost–effectiveness analysis (CEA) 4789
- CO<sub>2</sub>, see carbon dioxide
- cotton plant 10397
- cotton 2301, 4446, 4457
  - insect-resistant 4457
- cottonwood 1285
- cotyledon cells 4554
- Coulomb
  - collisions 7161
  - effects 7558
  - forces 3793
  - scattering 5561
- countercurrent gasifier 1452, 1470
- countercurrent recycle cascade 5639
- counter-footprint 9033
- countermeasure 3517, 3522, 3544
  - decision-aiding tools 3544
  - different environments 3522
- countryside biogeography 3363
- coupled model intercomparison project–5 (CMIP5) 2144
- Courant number 2035
- Courant-Friedrichs–Levy (CFL) limit 12067
- courtyard 6866
- covered lagoon digester 1153
- Cowper regenerator 10553
- Coxsackie virus 11989
  - Coxsackie A (CAV) 8138
- cracking temperature 1464
- crack 10644
- Cradle to Cradle® 9033
  - energy 9036
- crash barrier 3071
- Crassulacean acid metabolism 1481
- Cre/loxP system 2608
- Creutzfeldt-Jakob disease 2969
- criteria pollutant 218, 222, 2165
- critical crop mass (W<sub>c</sub>) 2665
- critical solvent de-ashing (CSD) 2232
- Cromadur 6821
- crop/cropping 1–2, 151, 1567, 1676, 2527, 2541, 2544, 2558–2560, 2562, 2567–2568, 2615, 2627, 2638–2639, 2641, 2661, 2665–2666, 2671, 2674, 2676, 2681, 2686–2688, 2690, 2698, 2720, 2723, 2731, 2735, 2742, 2749–2750, 2755, 4013, 4039, 4465, 4471, 4075–4076, 4088–4089, 4492, 5315, 5320, 6820, 8018, 10037–10043, 10347, 10694, 10749
  - abiotic stress-tolerant 2
  - adaptation to environmental stress 10749
  - agronomy 2686
  - assimilate sinks 2627
  - biomass 2676
    - accumulation rate 2666
  - biotechnology 1676, 4471
  - branching 10040
  - breeding 2530, 2690
    - plant genomics technologies 2530
  - Bt-expressing 4039
  - canopies 2617, 2620, 2623
    - digitization 2623
  - components 2742
  - density 2562
  - design 2742
  - development 2540, 2541, 2547, 2552, 2556
    - regulation 2547, 2552
    - related to temperature and photoperiod 2540
  - diseases 2558, 2560, 2567, 2574, 2577, 2688
    - biofumigation 2577
    - controlling 2560
    - host eradication 2560
    - induced resistance 2574
    - sanitation 2560
    - soil solarization 2577
    - use of chemicals 2567
  - diversification 151, 2750
  - domestication 2698, 10345
  - dry-matter production 10037
  - efficiency 6820
  - epicuticular waxiness 8018
  - evapotranspiration 9321, 9323
  - for insect resistance 4013
  - genetic ability to capture 10039
  - genetically engineered 4013
  - genetically modified 2742, 2755, 4492
  - genotype 10036, 10043
  - growth model 4089
  - growth rates 10038
  - growth simulation model 9316, 9321, 9322, 9326
    - nutrient management 9322
    - operational management 9322
    - pest management 9322
    - water management 9321
  - herbicide-resistant 10347
  - herbicide-tolerant 4465
  - high density 10041
  - improvement 2698
  - light interception (LI) 2627
  - insect-resistant 4039, 4465
  - irrigation 6628
  - loss 10694

- management 2627, 2686, 2731, 6208, 9316–9318, 9323, 9326
  - decision support systems (DSSs) 9318
  - integrated pest management 9326
  - simulation models 9316, 9318
  - water management 9323
- marker-based genome selection 2735
- mass accumulation 2671
- models 9317, 9319
  - simulation tools 9319
  - strategic management 9319
  - tactical management 9319
  - technical coefficient generators (TCGs) 9319
- monocultures 10037
- nitrogen content 9325
- nitrogen use efficiency (NUE) 2674
- nutritional improvement 1676
- pest 151, 156
- phenology 2544, 4075–4076
- phenotypic plasticity 10041
- physiology 2686, 4088
- planting arrangement 10042
- plants 2583, 2690, 10391, 10395, 10744
  - increased temperature effects 10391
  - mitigating effects of global warming 10395
  - modifications 10744
  - transformation methods 2583
- polycultures 10037
- practice 154
- production 1122, 2564, 2639, 2662, 6658, 9063, 9069
  - irrigation with coal-mine water 6658
  - irrigation 2564
  - nitrogen 2662
  - rotation of crops 1122
  - water 9063
- productivity 2559, 2681, 2687, 5621, 11452
- protectant fungicides 2567
- protection 2559, 9325, 9328
  - disease management 9325
  - pest management 9325
- radiation use efficiency (RUE) 2615, 2627
- rectangularity 10043
- residues 2749
- resistance 5442–5443
  - insect–plant relationships 5442
  - integrated pest management 5443
  - plant characteristics 5442
- resource use 10037
- responses
  - to available soil water 2638
  - to nitrogen 2661
- root systems 9065, 9068, 9070
- rotation 151, 1122, 1125, 1136, 2560, 2750, 5455
- salinity tolerance 5315
- salt tolerant 5320
- science 2681
- silking 10039
- simulation models 2553, 2555, 2735, 8014, 9320
- size effect 2672
- species 6441–6442
  - DNA-based markers 6442
  - wild relatives 6441
- structure 10036, 10039, 10041–10043, 10045, 10047
  - density 10043
  - effect of plant arrangement 10042
  - effect of soil resources 10041
  - plant yield 10043
  - responses in monocultures 10041
  - responses in polycultures 10045
- system (CS) 155, 1122, 1137, 2740, 2741, 2743–2745, 2749, 2751–2753, 10758
  - biodiversity 2753
  - biological synergism 2749
  - classification 2741
  - dynamic 2752
  - environmental damages 2745
  - flexibility 2744
  - humus balances 1137
  - new technologies 2753
  - plurispecific 2751
  - resilience 2743
  - shaping nature 2740
  - sustainability 1129
  - technical synchronization 2752
- tillering 10040
- trait 2689, 2692, 2714
  - gene isolation 2689, 2692
- transpirational cooling 8018
- under water scarcity 2641
- water depletion 1544
- water productivity (CWP) 1544
- water stress index (CWSI) 5626
- water usage 5623
- water use efficiency 1567
- yield 2720, 2723, 10036
  - potential 2641
- crop–livestock pairing 2751
- crop–soil simulation models 9328
- crop-to-residue ratio 1538
- crop–weed interactions 10048
- cross ventilation 6876, 6881
- crossbreeding 487, 1732, 1734, 1765, 1772, 1777, 1782, 2785, 2794, 27984
  - schemes 9391
  - systems 1736
- crosscurrent gasifier 1455
- cross-fertilization 10778
- crown gall 10701
  - disease 2587
- crude oil 7446, 7801–7802, 7806, 7822
  - extraction 7801
  - multilateral wells 7801
  - production methods 7802
  - secondary wells 7801
  - thermal recovery methods 7806
- Cry protein 4017, 4019–4023
  - coding sequence 4023
  - insertion into the cell membrane 4020
  - interactions with receptors 4017
  - oligomerization 4019
  - promoters 4022
  - protein coding sequence 4022
  - toxicity 4019
- Cry protoxin 4016
- Cry toxin 4028
- cryocooler 6256
- cryogenic air separation process 2171
- cryosphere 280, 284, 635, 2761, 2764, 3231
  - airborne and space-borne remote sensing technologies 280
  - conservation of energy 2764
  - modeling 2761
  - remote sensing 282, 284
  - thermodynamics 2764
- cryptorchidism 3639, 3648
- cryptosporidiosis 6615, 12049
- Cryptosporidium* 6326, 6333, 6613, 6615, 6628, 7677, 7683, 7686, 12049
- crystal lattice 7561
- crystal silicon photovoltaic cells 9674
- crystalline
  - ribbons 9205
  - silicon 8381, 9254, 9259, 9296
    - anode 9295
    - cells 9436
    - photovoltaic module 9434
    - solar cell 9198, 9265

- technology 7933, 7938
  - wafers 9215, 9241
  - solar cells 9241, 9267
    - Quasi Femi level splitting 9267
  - CSS-CdTe solar cells 1989
  - Cubozoa 12047
  - cullet 8802–8804, 8806, 8839
    - contaminants 8802
    - cross-contamination 8803
    - recycling technologies 8803
    - sorting 8806
  - culling of animals 455
  - cultivated crop 10705
    - disease management 10705
  - cultivated plant resources 1757
  - cultivated soil 3728
  - cultural eutrophication 5673
  - cultural geography 10369
  - cultural identity 10370
  - cultural landscape 10371, 10375
  - culture medium 6526
    - optimization 6526
  - culture-based diagnostics 5383
  - cultured fish 10799, 12033
  - cumulative internal illuminance 2825
  - cumulus-oocyte complex (COC) 6154
  - cup plant 1115
  - curbside recycling 8784
  - Curie-Weiss behavior 6086, 6090
  - current 7406
    - ambient air quality 185
    - data collection 7406
    - interruption 6728
    - transformers (CTs) 3009
  - cut corner 1690
  - cutterhead pipeline dredges 3035
  - cyanide 2502
  - cyanobacteria/cyanobacterial 356, 2084, 2089, 4830–4831, 4833–4835, 7388, 7669
    - bloom 2086
      - formation 4835
    - description 4830
    - detection 4834
    - economics 4833
    - nutrient interactions 4834
    - origins 4834
    - toxicity 4831
    - toxins 4832
  - cyanobloom 4833–4835
  - cyanogenic glycoside 4035
  - cyanosafrafrin B 3157
  - cyanotoxin 2085, 4831, 4833–4834
  - cyber taxi 7792
  - cycled-spheres reactor 1525
  - cycle 2455
  - cyclic siloxane 10668
  - cyclin-dependent kinase inhibitor 6
    - gene 10687
  - cycloalkane 10664–10665
  - cyclobutane pyrimidine dimers (CPD) 3611, 9664
  - cyclohexanedicarboxylic anhydride (CDCA) 6902, 6910, 6922
  - cyclohexanol 7592
  - cyclohexanone 4590
    - oxime 4590
  - cyclohexene 7593
  - cyclone burners 1327
  - cyclone/cyclonic 1250, 1339, 1667, 2199, 5239, 7402
    - classifying 2199
    - furnaces 5281
    - melters 11586
    - separator 1339
  - Cyclotella* 350, 353
    - *cryptica* 360, 365
  - cyclotrimerization of alkynes 10175
  - cylinder parabola 7620
  - cylindrical dams 2800
  - cylindrospermopsin 2086, 4832
  - Cylindrospermopsis raciborskii* 2089
  - cypermethrin 10718
  - Cyprinus carpio* 1939
  - cystathionine  $\gamma$ -synthase (CGS) 1695
  - cysteine 836–837
    - protease inhibitor 10718
    - residues 3667
  - cysteine-rich antifungal proteins 10697
  - Cyt toxins 4021
  - cytochrome
    - oxidase 3594
    - P450 (CYP) 3593, 3662, 7588, 7598
  - cytomegalovirus (CMV) 5000
  - cytoplasmic reprogramming 6164
  - cytoplasm 6150
  - cytosine
    - arabinoside 3153
    - methylation 10909
  - cytotoxicity 3605
  - Czochralski-Grown monocrystal 9202
- ## D
- daily mean irradiance 9750
    - probability function 9750
  - dairy 388
    - cattle 395, 402, 407, 411, 1770, 1774, 2781–2787
    - artificial insemination 2785
    - breeding 2781–2782, 2786, 2787
    - fertility 411
    - genetic evaluation 2784, 2786
    - genetic improvement 2783
    - health trait 2784
    - heritability of milk production 402
    - mastitis 411
    - population 2785
    - production 2781
    - progeny testing scheme 2785
  - cows 1784
    - methane production 1784
  - farm 2782
  - genetics 2782
  - milk 10855
  - products 1754
  - semen market 2782
  - dam 2788–2791, 2793, 2795–2798, 2800–2801, 3555
    - collapse 2797
    - construction 2755, 2788, 2795
    - cylindrical 2800
    - disaster 2791
    - ecosystems 2795
    - engineering 2788
    - environmental problems 2790
    - environmental protection 2801
    - failures 2789–2791
    - heritage protection 2793
    - induced subsidence 2797
    - in karst 2798
    - microclimate 2796
    - reservoir fluctuations 2795
    - spring submergence 2797
  - damage 3608
  - daptomycin 504
  - Darcy's law 3222
  - dark fermentation 5117, 5121, 5165
    - combination with photofermentation 5121
  - dark ocean surfaces 8958
  - DARPA urban challenge 66
  - Darrieus wind turbine (DWT) 3401, 3411, 3412, 4486
  - d*-axis 25
  - day vision 11100
  - daylight/daylighting 908, 913, 2804–2806, 2810, 2817, 2819, 2821, 2824–2825, 2827–2828, 2830–2834, 2836, 2838, 2841–2843, 2846, 2848, 2850, 2853, 2856, 2858–2860, 2863, 2865–2867, 2870, 2872, 2876, 2881, 2887, 2892, 3681–3682, 3688, 5336, 6876, 10290, 11115

- advanced glazing systems and materials 2836
- autonomy (DA) 2834, 2881
- benefit 2842, 2854
- challenges 2859
- climate-based 2832
- conditions 2825
- contribution of sun 2819
- controls 2846
- cost-effectiveness 2843
- definition 2848
- design 2850, 2866, 2885
  - design flexibility 2858
  - quality assurance 2885
- distribution 2806, 2863, 2872, 3681
- dynamic control 2838
- effectiveness 2866, 3682
- energy 2842
- energy saving potential 2854
- evaluation 2816, 2831
- exposure 2805
- factor (DF) 2817–2823, 2825, 2833, 2843
  - absolute values 2823
  - clear sky options 2833
  - graphical, tabular, and analytical methods 2820
  - influence of building properties 2818
  - physical modeling 2820
  - prediction by computer simulation 2821
  - standards 2822
  - uniformity 2819, 2823
  - value 2805
  - Waldram diagram 2820
- fixture 3681
- from perimeter glazing 2836
- glare index (DGI) 2828
- guidelines 2816, 2824
- health 2828, 2856
- hours 9622
- human factors 2827
- Hunt model 2830
- illuminance 2830
- illumination 2836
  - indoors 2806
- in buildings 2804, 2831
- in special-purpose buildings 2810
- louver geometry 2866
- louver surface qualities 2867
- management systems 2848
- measures 2816
- metrics 2833
- natural variability 2828
- nonvisual effects 2828
- nutrient ingestion 2856
- optimization 2850
- optimized mirror geometries 2867
- prediction techniques 2817
- productivity 2828
- redirection
  - blinds 2870
  - louvers 2876
  - systems patents 2892
- redistribution 2865
- responsive systems 2841
- saving energy 2841
- simulation 2821
- snapshot evaluations 2825
- strategy 2810
- sustainability 10290
- technology 2850, 2887
- transmission 2853, 2860, 3688
- user operation of lights and shades 2830
- visual comfort 2827
- with effective shading 2859
- daylit environment 2815, 2829–2830, 2840
  - measuring 2840
  - performance 2829
  - productivity 2829
  - well-tempered 2815
- DC motor 11526
- DC-DC converter 690
- DDGS 996
- De Micromis Party Exception 2012
- Deacon process 5252
- deacylation 4644
- debenzylation 4644
  - of carboxylic esters 4644
- Debye–Hückel equation 4096
- decadal climate variability 2123
- decadal forecast 2525
- decadal prediction 2137–2138, 2140, 2143–2145
  - data assimilation 2145
  - internationally coordinated efforts 2143
  - model fidelity 2137
  - observations 2140
  - prediction experiments 2138
- decarbonator 2899
- decarboxylation 2218, 4653
  - of cinnamic acids 4653
- deceleration
  - area 84, 87
  - control interface (DCI) 76
- decentralized generation 2977
- dechlorination 2445, 4006
- decommissioning 7079
  - of facilities 3542
  - remediation 3542
- decomposer 11229
- deconstruction 2395
- decontamination 3525, 3532, 7075
  - factor (DF) 3527
  - of land 3532
  - of water 9563
- Dee-Geo-Woo gen 2697
- deep aquifer remediation tool (DART) 10415, 10416
- deep circulation theory 5863
- deep ocean 5857, 5860, 5866, 5871, 5873–5874, 5876, 7347
  - circulation 5857, 5860
  - climate variability 5866
  - hydrography program 5876
  - hydrothermal activity 7347
  - observations of change 5871
  - observing system 5873–5874
  - overturning circulation 5873
  - sediments 7359
  - waters 7347
    - scavenged elements 7347
- deep sea drilling project (DSDP) 6417
- deep water 5859, 6414
  - circulation 5859
  - ecosystem 6414
  - formation 2514
  - masses 5859
- deep western boundary current (DWBC) 5857
- deep-cycle battery 5883
- deep-dose equivalent 3026
- defense meteorological satellite program (DMSP) 8932
- deferent 2100
- defibrillator 6510
- deficiency syndrome 2856
- deficit irrigation 5630–5631
- deflocculant 4416
- deforestation 549, 608, 1009, 2499, 3307, 3833, 4746, 4751, 5823
- degasification 11852–11853
- degassing 1449
- deglaciation 2456, 2460
- degraded soil 1571
- Degussa process 1526
- Dehalococcoides* 2437, 2445
- dehumidification enthalpy 9531
- dehydration 5, 1021, 2641, 2643
  - avoidance 2641
  - catalyst 2250
  - plants 1021

- dehydration-responsive element binding protein 10750  
 dehydrodidemnin B 3160  
 deindustrialization 11362, 11363  
 delayed coking 7831  
 delayed neutron 8567  
 delayed oscillator mechanism 2127  
 Delft ladder 2399  
 delithiation 712, 724, 726  
 deltamethrin 12003  
 demagnetization 28  
 demand surface 197  
 demand-response (DR) interconnection engineering 3015  
 demographic decline 11364  
 demolition waste 2391, 2395–2397, 2399–2400, 2402, 2412, 2414, 2417–2418, 10007  
   – classifications 2396  
   – composition 2396  
   – energy recovery 2414  
   – environmental hazards 2417  
   – generation 10007  
   – managing 2397  
   – metallic materials 2396  
   – mineral fraction 2397  
   – organic materials 2397  
   – processing requirements 2402  
   – recycling 2400  
   – reduction 2399  
   – reuse 2399  
   – separation process 2402  
   – sustainability issues 2417  
   – sustainable management 2418  
   – wastewater 2418  
 dendrite 786, 790  
 dendrogram 5390, 7975, 7976  
   – Raman-based 5390  
 Dengue hemorrhagic fever (DHF) 12014  
 denitrification 163, 884, 1136, 2278, 3781, 11894, 11901, 11936, 11956  
 DENOX system 2278  
 dense medium cyclone (DMC) 2200  
 densification 4684  
 density dependence 10065  
 density functional theory (DFT) 376, 3982, 6040, 6084, 6773, 7734, 8212  
   – Gibbs free energy 7734  
 deontic knowledge 4535  
 deoxyribose nucleic acid (DNA) 11393  
   – strands 5581  
 dephlogisticated air 3660  
 depleted uranium 11216  
   – munitions 8513  
 deposit formation 1340, 1342  
 deposited sediment 3728–3729, 3741  
 depositional sinks 3733  
   – establishing chronologies 3733  
 depression 9666  
 depth sounding radar 284  
 derived air concentration (DAC) 11055  
 dermatitis 12043  
 dermatotoxin 2085  
 desalinated water 7298, 7305, 7321, 11887–11888  
   – energy comparison 11888  
   – energy cost 11887  
 desalination 2079, 2324, 2897–2903, 2904, 2905, 2907–2912, 2915, 9758, 11886  
   – cost analysis models 2912  
   – energy consumption 11886  
   – for sustainable water resource 2897  
   – forward osmosis (FO) 2915  
   – granular media filter 2910  
   – industry 2898  
   – microfiltration 2910  
   – multieffect distillation (MED) 2901  
   – multistage flash (MSF) distillation 2898  
   – of seawater 2082  
   – plants 9759, 11944  
     – multi-effect distillation (MED) 9759  
     – multi-stage flash (MSF) 9759  
     – renewable energy-powered 9759  
   – posttreatment processes 2907  
   – pretreatment processes 2905, 2910  
   – reverse osmosis (RO) 2902  
   – solar-driven 9758  
   – desalination systems 2382  
   – ultrafiltration 2910  
 desert ecosystem 1552, 2933  
 desertification 2929, 3364  
   – impact on human systems 2929  
 desiccant  
   – air-conditioning systems 9525  
   – cooling system 9558  
   – evaporative cooling (DEC) systems 9515  
 design for the environment (DfE) 3446, 3447  
 desilylation 4645  
 De-Soete model 5309  
 desulfurization 1093, 2224, 2278–2279  
 detection 3076, 3078  
   – of beacons and traffic pylons 3076  
   – of road markings 3078  
 dethioacetalization 4645  
 detoxification of organic wastes 1629  
 detoxifying enzyme 4  
 detritivore 823, 824  
 detritus 824, 826, 1963–1964  
   – food chain 824, 826  
 developing country 1146, 1154, 1563, 1741, 1744, 1749, 1767, 1768, 1783, 1863  
   – agricultural growth 1563  
   – animal resource management 1768  
   – avian livestock 1749  
   – biogas production 1146  
   – brain-drain 1783  
   – breeding 1741  
   – development of biogas use 1154  
   – education 1767  
   – food-importing 1563  
   – inadequate sanitation 1146  
   – meat production 1744  
   – public transport investments 1863  
   – rural development 1563  
 developing region 1755  
   – livestock production 1755  
 developing world 1772, 1774, 1779–1781, 1786  
   – animal agriculture 1780  
   – animal breeding 1774  
   – breeding objectives 1779  
   – farming systems 1772  
   – livestock industries 1786  
   – multifunctional role of livestock 1781  
 developmental disorder 3638  
 devolatilization 1428  
 Dewar 4406  
 dewaxing 7839  
 DFIG turbine 12166  
*DGAT1* gene 488  
 dhurrin 4035–4036  
 diabetes mellitus 9656, 11135  
 diacylglycerol acyltransferase 488  
 diagnostic nuclear medicine 8580  
 diagnostic X-ray 8580  
 DIAL, see differential absorption lidar  
 diarrhea 5063  
 diarrhetic shellfish poisoning (DSP) 9085  
 diatomaceous earth 3958  
 diatom 4826, 6380, 7273, 7348, 11408  
 dibenzofuran 4880  
 dichlorobenzene 10972, 10974  
   – total concentration (TDCB(z)) 10974  
 dichlorodiphenyltrichloroethane (DDT) 3631, 3635, 6292, 11078  
 diclofenac 11924  
 dicot 1484  
 Dictyonema shale 7467  
 didemnin 3160  
*Didymozoidae* 12029  
 Diels–Alder reaction 10174



- diesel 267, 1002, 1218, 3860, 3956, 3978, 5493
  - blends 5493
  - buses 1881, 5981
  - electric locomotives 5095
  - electric system 5096
  - engine 932, 1460, 5088, 5525, 5531, 5532, 5534, 5536
    - boosting 5536
    - fuel conversion efficiencies 5534
    - soot-NO<sub>x</sub> tradeoff 5531
  - fuel 2246, 5494, 6246, 11430
    - filter smoke number (FSN) 5494
    - hydrotreatment 2246
  - multiple unit cars (DMUs) 5959, 5966
  - particulate filter (DPF) 267, 11322
  - sulfur-free 3956
- diethyl
  - carbonate (DEC) 6127
  - phthalate (DEP) 10667
- diethylhexyl phthalate (DEHP) 3638
- diethylstilbestrol (DES) 3628, 3629, 3636, 3638
- differential absorption lidar (DIAL) 309–311, 313, 317, 320, 325, 3231
  - airborne ozone 313
  - airborne water vapor 317
  - equation 311
  - space-based 320, 325
- differential global positioning system 3070
- differential scanning calorimetry (DSC) 6108
- differential thermal analysis (DTA) 11601
- differentiation-associated gene 6162
- diffraction method 6070
- diffuse double layer model (DDLML) 8614
- diffuse
  - irradiance 9628, 9630
  - light 2806
  - radiation 7920, 9682, 9716, 10625, 10633
  - sky illuminance 2824
  - sky irradiance/radiation 9682, 9720, 11382
- diffuse-radiation fertilization 7921
- diffusion 2017–2022, 2025, 2047, 2049, 2051
  - across a thin film 2017
  - across interfaces 2025
  - boiling flux 2021
  - coefficient 596, 2018, 2021–2024, 2049
    - in gases 2023
    - in liquids 2024
    - in solids 2024
  - concentrated 2020
    - dispersion 2021
    - equation 2020, 2051, 10956, 10962, 10963, 10969
      - development 10963
    - flux doubles 2018
    - Gaussian concentration profiles 2022
    - mathematical description 2017
    - permeance 2018
    - unsteady 2019
- diffusive flux rate 10963–10964, 10966
- diffusive transport with convection 2034
- Digenea 12023
- digestive proteinase 4029
- digital elevation map (DEM) 8940, 10622
- digital map 6955, 6974
- digital signal processor (DSP) 11542
- digital solar atlas 10629
- dihydrodipicolinate synthase (DHPS) 1694
- dihydropyrimidinone 4654
- dilantin 11926
- dilithium ethylene dicarbonate 6042
- dilute-acid hydrolysis 967
- dimethyl
  - phthalate (DMP) 10667
  - sulfate 3985
  - sulfide 120, 611, 2116, 7272
  - sulfoniopropionate 7272
- dimethylether (DME) synthesis 1043, 1049, 1062, 1428, 2225, 2235, 2247, 3985–3987, 5468, 5473, 5488, 5492
  - commercial activities 3986
  - dehydration reaction 3985
  - fixed bed reactors 3986
  - gas phase production 3986
  - pathway 3985
  - slurry phase production 3987
- dimethylsulfoxide 3424, 10906
- $\alpha,\alpha$ -dimethyltricarballic acid 123
- dimming effect 141, 6748
- dinitrogen monoxide 1598
- dinoflagellate 829, 832, 2493, 4821, 9086
- Diectophymatidae 12031, 12039
- dioxin 172, 856, 3634, 4883–4884, 4904, 4992, 5237, 5240, 5263, 5267–5268, 5289, 7000, 8110, 10666, 11720, 11869
  - chlorination 10666
  - diets 5289
  - emission 11697
  - formation 4881
  - non-chlorinated 10666
  - salient factors 5267
- diphenyl ether (DPE) 7747
- Diphylobothriidea 12022
- diploid animal genome 478
- dipole magnet 6261
- dipstick assay 5383
- Dipteran pests 4025
- Dirac function 2020, 2043, 8648
- direct aerosol radiative forcing effect 135
- direct air capture (DAC) 2151, 2154, 4108
- direct alcohol fuel cell (DAFC) 10501
- direct beam 9691
  - radiation 11382
- direct breeding value (DBV) 9363, 9367
- direct capture of high-purity streams 2151
- direct carbon fuel cell (DCFC) 10501
- direct coal liquefaction (DCL) 2223, 2229
  - block flow diagram (BFD) 2229
- direct contact membrane distillation 2920
- direct current (DC)
  - electricity 3873
  - power transmission 11181
- direct DNA transfer 2590, 2594, 2603, 2606
  - chemical methods 2590
  - integrity 2603
  - minimal expression cassettes 2594
  - physical methods 2590
  - transgene structure 2603
- direct field-oriented control 42
- direct gene transfer 2594
- direct irradiance 9630
- direct land use change (DLUC) 934, 1497, 10513
- direct light 2806
- direct liquefaction 2228, 2253
- direct methanol fuel cell (DMFC) 373, 3389, 3850, 3858, 3866, 6539, 8266, 8269, 10501
- direct normal irradiance (DNI) 9591, 9630, 9635, 9718, 9748
- direct radiation 9716
- direct solar dryer 9487
- direct solar radiation 7911, 9573
- direct-alcohol fuel cell 3916
- direct-beam radiation 9692
- direct-injection engine 5482
- directional drilling 4397
- directionally solidified (DS) superalloy 6848
- direct-methanol fuel cell 3912
- dirty air 239
- dirty bomb 8529
- disaster 2265
  - waste 10010–10011
    - characterization 10011
    - generation 10010
- discarded computer 3444
- discarded solid waste 5708
- disclimax 3282, 3285
- discounting 7184



- disease-resistant transgenic animals 2963
- disease 11997
  - epidemics 411
  - water- and sanitation-related 11997
- disinfection 11391
  - by-products (DBPs) 2084, 2907, 3632, 3638, 3647, 3649, 7587
- disperse city 5840
- dispersion 2021, 2031–2033, 2035, 2037–2038, 2047, 10956
  - coefficient 2021, 2032, 2033, 2037, 2041, 8617
  - longitudinal 2033
  - tracer determination 2041
  - in groundwater flow 2035
  - in laminar flow 2032
  - in rivers 2038
  - in turbulent flow 2033
  - of pollutants 259
  - Peclet number 2037
  - plug flow 2032
- dissolved
  - gas drive 7803
  - inorganic carbon (DIC) 8668
  - metal 10051
  - organic carbon (DOC) 6372, 8395, 8396, 10533, 11386
  - organic matter (DOM) 9111, 10052, 11231
  - organic nitrogen (DON) 6372
  - oxygen 5673, 5688, 11954
    - control 11947
- distance relay 12089–12090
- distillation 977, 981, 994, 996, 1006, 1047
  - plant 981
- distillers' dried grain with solubles (DDGS) 989
- distraction 3112, 3114, 3121, 3124–3125
  - ANFIS model 3125
  - detection 3121, 3124
    - algorithms 3112
- distributed
  - energy resources (DER) 3012, 3019
  - generation 2977, 3012, 3014, 3016–3017, 3019, 3395, 3465, 9935
    - impact on system protection 3019
    - machine-based 3019
  - impact
    - on ferroresonance 3019
    - on power quality 3017
    - on voltage regulation 3016
  - technology landscape 3014
  - vehicular environment 2469
  - wind power production 12113, 12115
- forecast errors 12115
- variability 12113
- distribution 2978–2981, 2984–2985, 2987, 2989, 2995, 3003, 3011
  - arrester housings 3003
  - automation functionality 2985
  - breakers 2978
  - capacitor 2979, 2989
  - devices 2978
  - ethernet-based 2984
  - feeders 2987
    - circuits 2978
    - protection 3011
  - fuses 2979
  - network protocol (DNP) 2984
  - point-to-point protocol (PPP) 2984
  - reclosers 2978
  - safety 2981
  - substations 2995, 2998–2999, 3005, 3008–3010
    - automation 3008
    - bus protection 3010
    - busbars 2999
    - design 3005
    - incoming sub-transmission supply line 3009
    - physical appearance 3008
    - primary feeder 2995
    - protection 3008
    - transformers 2998
    - transformer protection 3010
  - switches 2978
  - system 2976, 2978, 2984, 2988, 2989, 3019
    - communications system 2984
    - integrated volt/VAR control (IVVC) 2988
    - intelligent electronic devices (IEDs) 2984
    - microgrid operation 3019
    - volt/VAR control (VVC) 2987, 2989
- district heating 4359
  - pipework 11783
  - pumps 11776
- disturbance model 51
- disurbanization process 11364
- diurnal temperature range (DTR) 9735
- divergence-with-gene-flow model 3362
- diversification 2742
- diversity
  - indexes 3299, 10085
  - of plant and animal life 939
- DNA 641–642, 644, 648, 3599–3600, 3603, 3605, 3607–3608, 3643, 10824
  - coding sequence 3603
  - damage 3599–3600
  - encoding 641
  - markers 462, 480
  - methylation 2606, 6159–6160, 6171, 10686
    - reprogramming 6159
  - methyltransferases 3603
  - microinjection 7219, 10902–10903, 10917
  - molecule 639
    - exogenous 639
  - mutations 3599, 3600, 3605
  - polymerases 3599, 5384
  - polymorphism 476
  - repair 3599, 3643
  - sequencing 2690
  - technology 474
  - topoisomerases 3607
  - transfer into the cell 10824
  - transgenic constructs 642
  - transposon 644, 648
  - vaccines 6300
- Dobson spectrophotometer 9723
- docosahexaenoic acid (DHA) 1697, 9080
- dog 11400
- Dolabella auricularia* 3153
- dolastatin 3155
- dolomite 1913, 5646
- dolphin 3569
- domestic
  - biotechnology 2288
  - energy
    - carrier 8976
    - supply system 1370
  - fuel emissions 11316
  - heating 1615, 11295
  - waste 4903
  - wastewater 11962
    - membrane bioreactor 11962
- domestication/domesticated 386, 390, 416, 1746, 2690, 2744, 9151, 10813, 10867
  - crop 351
  - genetic analysis 2690
  - molecular isolation 2690
  - molecular techniques 390
  - nature 2744
  - of animals 10852
  - syndrome 8045
  - through artificial selection 8002

- domoic acid 4826, 4829
  - detection 4829
  - in shellfish 4829
  - quantitation 4829
- donor cell 6167
  - reprogrammability 6167
- donor chromatin 6171, 6173
- dopamine 10644
- dopant 3024
- Doppler pellet sensor 6359
- dormancy 9145–9149, 9151–9153
  - breakage 9153
  - classifications 9146
  - definitions 9146
  - genes 9148
  - implications
    - in agriculture 9147
    - in weed control 9152
  - in cultivated species 9148
  - in natural seed banks 9152
  - lack of 9151
  - malting barley 9149
  - persistence 9148
  - sunflower 9148
- Dorno radiation 11149
- dose–response curve 3254
- dose–response relationship 3253–3256, 11378
  - cellular responses 3256
  - epidemiological studies 3256
  - exposure to mixtures 3255
  - for biomarkers 3254
  - nonmonotonic 3255
  - sigmoidal curve 3253
- dosimeter 3022, 3027, 3028
  - electronic 3028
  - of record 3027
- double fire gasifier 1457
- double perovskite 2952–2954
  - catalysis 2953
  - conductivity 2953
  - stability 2954
- double rotary kiln pyrolysis 1525
- double strand break (DSB) 10822
- double-compartment solar oven 9501
- double-cropping system 1123, 1139
- double-flash
  - power station 4298
  - steam power station 4280
  - turbine 4257
- double-stranded
  - DNA (dsDNA) 11985
  - RNA (dsRNA) 11985
- doubly fed induction generator systems 12152
- doubly salient permanent magnet machine 11528
- Douglas-fir 3290
  - individual-based model 3290
- Dow membrane 6541
- downdraft combustion 1357, 1385
  - vertical or lateral 1357
- downdraft gasifier 11443
- downhill simplex algorithm 10607
- downhole
  - heat exchangers 4372
  - monitoring techniques 4204
  - pumps 4367
- downwind 11267
- doxorubicin 3157
- doxycycline 643, 10915, 10919, 11083
- Dracunculidae* 12040
- drag bit 4394
- dragline bucket dredge 3034
- drainage 5668
  - basin 8634
  - problems 5666
- draw solution 2916, 2920
- DREB/CBF protein 7
- dredged material 3032, 3038–3039, 3041–3042, 3047–3048
  - beneficial use 3041
  - confined disposal facilities 3039
  - disposal 3038, 3048
  - management 3047
  - placement 3038
  - transportation methods 3038
  - treatment 3042
- dredge/dredging 3028–3029, 3031–3035, 3038, 3042, 3044–3045, 3047–3048
  - construction 3031
  - dredged material management 3031
  - electric powered 3048
  - environmental cleanup 3038
  - environmental considerations 3028
  - environmental enhancement 3031
  - environmental regulation 3045
  - equipment 3032
  - for environmental cleanup 3033
  - hydraulic 3031, 3034
  - mechanical 3031, 3032
  - mining 3031
  - navigation 3031, 3048
  - of contaminated sediments 3038
  - of navigation channels 3045
  - reclamation 3031
  - regulatory authorities 3047
  - removal of surface-dwelling biota 3042
  - resuspension of sediments 3044
  - ships 3035
  - sponsors 3047
  - sustainable 3047
  - technological innovations 3048
- drift 492
- driftsonde 3231, 5073–5074
  - ballooning systems 5073
  - miniature in situ sounding technology 5073
  - observations 5073
  - system 5072, 5081
    - test-campaign 5081
  - trajectories 5074
- drillable straddle packer (DSP) 4401
- driller 4382
- drilling/drill 4382–4383, 4385, 4388, 4390–4397, 4399–4400, 4403, 4405–4408, 4416, 4427–4428, 7800
  - acoustic telemetry 4406
  - bits 4394
  - blowouts 4427
  - bottom-hole assembly (BHA) 4393–4394, 4396
  - casing 4383
    - designs 4390
  - cementing 4403
  - collars 4396
  - commercial planning software 4388
  - contractor 4405
  - core rig 4391, 4395
  - cuttings 4382
  - dewars 4406
  - directional 4383, 4396
  - disposal of waste 4416
  - downhole measurements 4406
  - environmental impacts 4416
  - expandable tubulars 4408
  - fluids 4397, 4398, 4399, 4401–4402
    - blowout 4402
    - blowout preventer (BOP) 4402
    - circulating system 4398
    - kick 4402
    - mud program 4399
    - mud systems 4398
    - properties 4398
    - well control 4401
  - hole stability 4383
  - instrumentation 4405
  - lost circulation 4399
  - mud 4397
    - mud-pulse telemetry 4406
  - noise 4428
  - pipe 4395, 4409
  - platforms 6638
  - rate of penetration (ROP) 4385
  - rig 4392, 4405
    - rotary rigs 4391

- slimhole 4390
- string 4382, 4392, 4396–4397
- surface measurements 4405
- system 4381
  - basic functions 4381
  - selection criteria 4390
- trouble 4385
- waste materials 6638
- well
  - completion 4403
  - cost 4385
  - design 4385
- wellbore sealing 4400
- with casing (DWC) 4407
- drinking water 2089, 2755, 3454, 3639, 6607–6611, 6615, 6621, 6623, 9564, 10537, 11936
  - chlorination by-products 3639
  - consumption 6611
  - cryptosporidium 6615
  - disinfection 9564
  - exposure assessment 6611
  - *Giardia* concentration 6623
  - hazard identification 6609
  - health risks 6608
    - of hazardous events 6623
  - health targets 6607
  - microbial risk assessment 6623
  - odor control 10537
  - pathogenic microorganisms 6607
  - pollution 2043
  - public health status 6608
  - quality 11387
  - risk assessment 6608–6609
  - safety 6608, 6621
  - taste control 10537
  - treatments 10537
- driver 3083, 3085, 3099–3100, 3103, 3105, 3107–3110, 3112–3114, 3118, 3120–3122, 3126, 3129–3131, 3135
  - alert control 3114
  - anger scale 3100
  - assistance system 3052, 3067, 3107, 11098, 11099, 11126, 11456, 11468
    - automatic detection 3067
    - biologically inspired 3052
    - camera-based vision systems 11098
    - site mapping 3067
    - requirements of vision systems 11099
    - vision-based 11099, 11126
  - attention warning system 3114
    - commercial products 3114
  - behavior 3082, 3099, 3100
    - at intersections 3082
    - patterns 3112
    - self-reported survey 3100
  - behavior questionnaire (DBQ) 3100, 3102–3104, 3107
    - factor analysis theory 3107
    - participants 3100
    - Cronbach's alpha reliability coefficient method 3102
    - data statistical analysis 3104
    - method 3100
    - Pearson correlation coefficient 3103
    - quantification analysis 3104
    - reliability 3102
    - validity 3102
  - biological measures 3118, 3129
  - characteristics 3099, 3103
    - quantification 3105
  - distraction 3109, 3124, 3127, 3131
    - bright pupil effect 3127
    - detection 3121
    - road geometry 3124
    - template matching method 3127
  - drowsiness 3114
    - estimate system 3120
  - eyelid features 3120
  - fatigue 3109, 3113
    - detection 3120
  - inattention 3108, 3115, 3126, 3130–3132
    - biomathematical models 3130
    - detection 3116–3117
    - driver fatigue monitor (DFM) 3115
    - face segmentation 3126
    - hybrid measures 3132
    - monitoring 3131
    - systematical design consideration 3131
  - intentions 3122
  - mental state 3120
  - mistake 3100
  - driver monitoring system 3114
  - navigational error 3085
  - older population 3135
  - physical measures 3120, 3122
  - physical parameters 3130
  - physical signal extraction 3126
  - posture dynamics 3126
  - preparatory behavior 3083, 3085, 3088, 3091, 3093, 3095
    - influence of road structure 3091
    - influence of traffic conditions 3088
    - influence of vehicle velocity 3088
    - prediction of onset location 3095
    - structural equation modeling 3093
  - self-evaluation 3107
  - skill 3100
  - sleepiness 3110
  - state monitor (DSM) 3115
  - state sensor (DSS) 3116
  - visual behavior 3112
  - visual distraction 3122
- drivers–pressures–state–impact response 10377
- driving 3085–3086, 3100, 3104, 3107, 3112, 3122, 3130, 3135–3137, 3143
  - age-related functional deteriorations 3135
  - behavior 96, 3135
    - data collection 3085
    - older drivers' 3135
    - research 3100
  - cognitive distraction 3112
  - corridor 80, 88
  - inattention 3110
    - monitoring system (DIMS) 3110
  - dynamics 256
  - lane keeping 3136
  - older adults 3135
  - performance measures 3122, 3130
  - recorder system 3086
  - safety 3052, 3082, 3136–3137, 3140
    - age-related changes 3136
    - car following in fog 3137
    - collision detection 3140
  - simulators 3086
  - skill 3104, 3105
    - inventory 3100
    - self-evaluations 3105
  - speeds 3088
  - steering control 3137, 3143
  - style 3107
  - tasks 3083
  - time-to-contact (TTC) 3136
  - under reduced visibility conditions 3135
- drop collision 9700
- drop-in fuel 10527
- dropsonde 5073
  - data 5081
- Drosophila* 10679
- drought 2090, 2646, 2652, 2789, 8905
  - frequency 2321
  - stress 2649
- drowsiness 3121
  - detection 3121
  - eye movement 3121
  - level 3120

- drug 3152
    - abuse 10642, 10654
    - delivery 11080
    - discovery in ocean 3150
    - discovery 1188
    - marine-derived 3152
    - overdoses 3590
  - dry air cooling tower 9513
  - dry ash 6488, 11743
  - dry combustible 11830
  - dry fuel 9834
    - calorific value 9834
  - dry matter production 11396
  - dry recooling 9534
  - dryland 2755, 2930, 2932, 3315
    - productivity 2930
  - dry-steam
    - dry-steam gathering 4290
    - power station 4278
  - dry-tomb sanitary landfills 5721, 5732
  - dual carbon cell 3430
  - dual clutch transmission 3489
  - dual combustion boiler 1369
  - dual fluidized bed gasifier 1432
  - dual fuel engine 1528
  - dual mechanical port (DMP) machine 11546
  - dual-fluid organic rankine cycle 4315
  - dual-pressure cycle 4267
  - duct burner 4986
  - Dugoff tire model 3056, 11191
  - Dulong equation 5245
  - dulse 522
  - Dunaliella bardawil* 359
  - Dunaliella salina* 350, 358, 360, 365
  - dung 1538
  - dunite 1910, 1912, 1917–1918, 1922
    - intrusion 1918
  - Dunne runoff 3222
  - durum wheat 5321
  - dust/dusty 124
    - collection 5239
    - combustion 1320, 1327
      - fuel quality 1327
    - firing 2273
    - gas model 2922
    - suppressant 270
  - dustpan dredge 3038
  - Dutch tank leaching test 11726
  - dwarfing gene 2697, 2692, 6202, 6211
  - dye sensitized solar cell (DSSC) 7934
  - dye tracing 5664
  - dye-sensitized solar cells (DSSCs) 3855, 6567, 6576, 7940
  - dynamic(s) 2766
    - building simulation 6884
    - capacitor 9353
    - cropping systems 2742
    - downscaling 6597
    - *dq0* modeling 33
    - environment 3195
      - contextual map 3195
    - link library 11197
    - mechanical behavior 6920
      - plasticization 6920
    - pressure oscillation 6841
    - range extension 11110
      - experimental observations 11110
    - range 11106–11107
      - definition 11106
      - reliability criterion 11107
    - roughness 2054, 2060
    - source routing 11553
    - traffic assignment (DTA) models 7854
    - vegetation models 3292
  - dynamometer 5505
  - dynamometric wheel 3061, 11196
  - dynode 5565
  - DyNOR®
    - process 4960
    - system 4985
- ## E
- E. coli*, see *Escherichia coli*
  - Earnshaw's theorem 6247
  - earth 4180, 4568
    - atmosphere 9804
    - berming 4146
    - crust 3239
    - ecosystems 9740
    - energy balance 5415
    - gravitational potential 4568
    - gravity field 4568
    - heat balance 4917
    - heat sources 4180
    - integration 4146
    - magnetic field 8577
    - pipes 4146
    - radiation budget (ERB) sensors 9627
    - sheltering 900, 4146
    - solar effects 9804
    - surface 9731, 9749
      - energy balance 9731
      - irradiance 9749
    - system 2099–2100, 3201, 3211–3212, 3230
      - carbon cycle 2100
      - environmental literacy 3201
      - model (ESM) 623, 2112, 2511, 2513, 3212, 7367, 10137, 10167
      - modeling the land component 3211
      - monitoring 3230
      - total magnetic field 8471
      - tubes 4146, 4148
      - water cycle 11874
  - EarthCARE satellite 324
  - earthquake 2423–2425, 2427, 2429, 3233–3235, 3240, 3242, 3243, 3245–3249, 3508, 3553, 4128, 4422, 4570, 11633, 11635, 11642, 11646
    - associated with volcanoes 11635
    - bridges and viaducts 3240
    - buildings 3248
      - building codes 2429
    - characteristics 3234
    - construction planning 2427
    - dams 3242
    - deformation 3234
    - early warning systems 2429
    - engineering 3234
    - epicenter 2424
    - faulting 3233, 3249
    - ground and structure interaction 2425
    - ground condition considerations 2425
    - ground motion 3234
      - considerations 2425
    - landslides 3248
    - line-like and tubular structures 3247
    - mitigation 2427
    - monitoring 2429, 11635
    - power transmission lines 3246
    - risk 2427
    - roadways and railways 3240
    - rockfalls 3248
    - strong-motion station 3235
    - subways 3245
    - surface breaks 3234
    - tunnels 3243
    - waves 2427
  - earth–sun geometry 9711
  - earth-to-air heat exchangers 4146
  - earth-to-sun distance 11152
  - east urals radioactive trace (EURT) 3531
  - eastern wind integration and transmission study (EWITS) 12269
  - Ebara TwinRec process 3998
    - recovery 3998
    - recycling 3998
  - ebb generation 10614
  - ecceasis 3281
  - Echinostomatidae* 12028
  - echovirus 11989
  - eco-certification 10318
  - eco-design 3447, 10318
  - eco-driving 268

- eco-efficiency 9028
  - unintended consequences 9028
- EcoFuel 11796
- eco-imperialism 4524
- eco-indicator 99 196
- ecolabeling 556–557, 575, 10318
- ecoliteracy 8860, 8869
- ecological/ecology 3291, 3583
  - aquaculture 533, 537, 540, 566
    - development model 540
  - base flow 2795
  - carrying capacity 1965
  - certification standards 1963
  - communities 3303
  - computational power 3291
  - education 3203, 3205
  - energetics 3285
  - epidemiology 3267
  - food webs 3451
  - footprint 2746, 3450, 6861, 9028
  - forecasting 2265
  - gradients 3357–3358
  - in the city 11327
  - lung 1624
  - network 6216
  - of species 10092
  - processes 6219–6220
    - invisible place 6220
    - invisible present 6219
  - pyramid 824
  - risk assessment 3264, 3268
    - biological organization 3268
    - choosing the appropriate organisms 3268
  - succession 3278–3280, 3292, 3297
    - historical development 3280
  - sustainability 8858, 8861–8862, 8876, 10369
  - systems 3296
  - toxicity 4855
  - transition 3359
- economic
  - feasibility 3469
  - injury level (EIL) 5432
  - input–output life cycle assessment (EIO-LCA) 1501
  - scheduling 12110
  - sustainability 8708
    - assessment (EESA) 4785
  - threshold (ET) 5432, 5433
    - limitations 5433
  - valuation methods 4789
  - value 9042
- Ecopath 1967–1968
- eco-region 1557, 1560
- eco-roof 4732, 10359
- Ecosim 1967
- ecosystem 156, 158, 536, 547, 568, 2176, 2490, 3279, 3281, 3284, 3286, 3287, 3297, 3299–3303, 3306–3309, 3311–3313, 3317, 3318, 3326–3327, 3329, 3331–3335, 3338, 3342, 3351, 3354, 3358, 3547, 4495, 5553, 8857, 10078, 10090
  - adaptive management 3342
  - anthropogenic disruption 3317
  - approach to aquaculture (EAA) 1960, 1969
  - autocorrelation 3333
  - compartment models 3286
  - concept 3283
  - cone spring model 3309, 3311
  - contamination 3547
  - coral reef 2490
  - definition 3284
  - development 3312
  - diversity 10090
  - dynamics 3326
  - ecological energetics 3286
  - ecotonal interfaces 3338
  - ecotones 3358
  - engineers 3303
    - usefulness for management 3303
  - flow analysis 3297, 3306, 3312
  - flow matrix 3308
  - food-chains 3312
  - functioning 3301–3302, 3318, 10078, 10782
  - geostatistics 3335
  - goal functions 3311
  - health 536, 547, 1932
  - integrity 536
  - invasive species 5553
  - keystone species 3300
  - limits 536
  - management 3354
  - mathematical optimization models 3312
  - modelling 3309, 7009–7010
  - multiple spatial scales 3331
  - network flow model 3308
  - panarchy 3351
  - peat-forming 2176
  - point pattern analysis 3333
  - science 529
  - service 3297, 3306, 3313–3324, 10359, 10362, 10369, 10723, 10782
    - across systems 3315
    - classification 3314
    - definition 3314
    - distributional effects 3323
    - dynamic effects 3323
    - economic valuation methods 3318
    - global policy 3321
    - history 3317
    - human health 3323
    - in China 3320
    - initial development 3317
    - institutional design 3324
    - InVEST 3322
    - mapping 3321–3322
    - marine spatial 3320
    - modeling 3320
    - monetary valuation 3323
    - NatCap 3322
    - research efforts 3321
    - resource decisions 3319
    - supply chain 3316
    - synergies 3323
    - trade-offs 3323
    - water funds 3319
  - sources of heterogeneity 3329
  - spatial analyses 3332, 3333
  - spatial autocorrelation 3334
  - spatial patterns 3297, 3326–3327
  - spatial processes 3331
  - spatial scale 3335
  - structure 3307
  - sustainability 3326
  - total system throughflow (TST) 3308
  - traits 3303
- ecosystem-based management (EBM) 1968
- ecotilling 2734, 4497
- ecotone 3298, 3357–3359, 3361–3365
  - agricultural 3363
  - biodiversity 3364
  - characterizing 3359
  - conceptual Framework 3358
  - conservation 3364
  - effects on biodiversity 3359
  - environmental transitions 3365
  - evolutionary processes 3361
  - history of research 3359
  - human-generated 3358
  - human-related 3363
  - measuring 3359
  - patterns of biodiversity 3361
  - planning 3364
  - populations 3358, 3363
  - sustainability 3361, 3364
  - urban 3363
- ecotope 11338
- ecotoxicity 4856, 7605

- ecotoxicology 3266
  - of radioactive substances 3583
- EcoTrends Project 6232
- Ecteinascidia turbinate* 3157
- ectotherm 5058
- edaphoclimatic resources 2749
- eddy
  - correlation 602
  - diffusion coefficient 2055
  - diffusivity 2033
  - velocity 2052
- eddy-permitting model 7368
- edge effect 3364
- edible solid waste 9980
- edible vaccine 8077
- E-diesel 5493, 11434
- Edmonton transit system 5994
- education recycling 10033
- Edwardsiella* 5056
- E-factor 4615, 4619, 4623
  - values 4623
- effective delayed neutron fraction 3814
- effective disinfection time (EDT) 9581
- effective skin dose 11381
  - transmission 11381
- effective surface albedo 11156
- effective UV protection 11385
- E-gas gasifier 2239
- egomotion 6971
- ego-vehicle 10590, 10592
- eicosapentaenoic acid (EPA) 1697, 9080, 9114
- Einstein diffusive motion 8209
- Ekman divergence flow 8672
- El Niño Southern Oscillation (ENSO) 2123, 2125, 2455, 2515, 4573, 6742, 7253, 7259, 7374, 9320, 9639, 9805, 10164
  - events 2122, 2123, 2125, 2130, 2144, 5898, 8927
  - index 7259
  - phenomenon 2122, 4565
  - teleconnections 2123
- elastic collision 3789
- elastic scattering 3802
- elastic-band method 2483
- elastic-viscous-plastic (EVP) material – 2763
- elastin-like polypeptide (ELPs) 8065, 8078
- elastomeric binder 9307
- elected fusion 6954
- electric arc furnace (EAF) 8810, 11588
  - dust (EAFD) 9613, 11597
- electric
  - braking system 10544
  - car 303, 6247
  - conductivity 2947
  - coupling 3372–3377
    - backward boosting 3377
    - backward bucking 3376
    - devices 3374
    - forward boosting 3376
    - forward bucking 3375
  - double-layer 3428
    - capacitor (EDLC) 3427–3428
  - energy 2886, 3368, 3370, 3394, 12213
    - conductor 3394
    - distribution 3394
    - efficient transmission 3394
    - measurement 2886
    - transformation 1249
  - generating unit (EGU) 5915
  - grid 7850, 10522, 10563
    - reliability 7850
    - stability 7850
  - heating 12103
  - lighting 909, 2810, 2854, 2863, 2881
    - energy consumption 2854
  - machine 5110, 12141
    - flywheel system 5110
  - motor 3370, 10543
    - electric motor drives 11524
    - torque-speed characteristic 10543
  - pipe 12186
  - power 1331, 2164
    - generation 4168, 6808
    - industry 2072, 10475
    - infrastructure 10450, 12079
    - network 7849
    - production 1330
    - utilities 11160
  - rail technology 1881
  - reliability 10946
  - road vehicle 268
  - stress 11162
  - substation 3394
  - traction system 1816
  - trolley bus 5980
  - utility industry 2977
  - vehicle (EV) 710, 719, 768, 795, 3367, 3368, 3391, 3392, 3458, 3857, 6147, 8112, 10498, 10542, 11503, 11509, 11523, 11524, 11539, 11541
    - architectures 3368
    - battery management 6147
    - battery-powered 3368, 8112
    - electric motor drive 11524
    - electronic interface 3391
    - onboard energy source 795
    - power converters 11539
    - soft-switching converters 11541
    - traction motor 11523
- electrical/electrically
  - blackouts 10935
  - calibrated radiometers 9471
  - compensation radiometers 9676
  - conductivity 8356
    - back corona 8356
    - resistivity 8356
  - double-layer (EDL) 742, 6788
  - capacitors (EDLC) 6773
  - energy 3873, 7848
    - mobile decentralized storage (MDS) 7848
    - demand 9334
    - storage 7851
  - generating system 12149
  - generation 2991
    - substations 2991
  - grids 10943
  - heating 776
  - machine 12142–12143, 12148
    - AC-machine 12142
    - DC-Machine 12142
    - rotating flux vector 12143
  - power generation 2935
  - power system 672, 10937
  - powertrain 11504
  - stress 11172
  - submersible pump (ESP) 7804
  - system 9338, 12135
    - distributed control techniques 9338
    - dynamic granular control (DGC) 9338
    - optimal power flow (OPF) 9338
  - transmission systems 3393
  - transnational infrastructures 10936
  - tree 11174
- electricity 208, 1040, 1095, 1200, 1266, 1547, 2164, 3395, 3397, 3846, 4475, 4481, 5137, 5539, 6500, 6829, 7192, 8981, 10453, 10938
  - as medicine 6500
  - blackouts 10938
  - daily patterns 8981
  - demand 2164
    - requirements 7192
  - distribution 2977, 3395
  - fossil-based 1040
  - from biomass 1200
  - from natural gas 6829
  - generation 1547, 2163, 3396
    - with small wind turbines 3396
  - grid 8986
    - generator modeling 8986
    - interconnection 8986

- market 7853, 9334, 12109–12111, 12131, 12255
    - daily planning 12109
    - day-ahead market 12109
    - hourly operation 12111
    - intraday market 12110
    - post-trading 12111
    - seasonal/yearly planning 12109
    - weekly planning 12109
  - mix factor 4764
  - mono- and co-combustion 1266
  - network 3013, 7863, 10449
    - outage management 7863
    - smart grids 3013
  - pathways 10520
    - battery-powered electric vehicle (BEV) 10520
    - plug-in hybrid electric vehicle (PHEV) 10520
  - Peltier effect 5539
  - physiological effects 6500
  - poly-generation 5137
  - price 10456
    - critical peak pricing (CPP) 10456
    - real-time pricing (RTP) 10456
    - time-of-use pricing (TOU) 10456
  - production 1095, 1435, 2384, 3397, 7185, 10450, 11768, 11772
    - energy discount rate 7185
    - estimated costs 2384
    - life-cycle cost 7185
    - Rankine steam cycle 11768
    - steam turbine 11772
    - via gasification 1435
  - reliability 10453
  - seasonal patterns 8981
  - Seebeck effect 5539
  - storage 8995, 12098
    - chemical storage 8995
    - compressed air 8995
    - pumped hydroelectricity storage 8995
  - supply 1089
    - based on biogas 1089
  - system 8981
    - background 8981
  - transmission 3395
  - value chain 10946
  - wind-generated 4475
- electricity-to-heat ratio 11786
- electroactive catalyst layers (ECLs) 3874
- electrocardiogram 6501
- electrocatalysis 3880
- electrocatalyst 3883, 7611, 7732, 8212
- electrocatalytic fuel oxidation 2940
- electrocatalytic oxidation 2939
- electrochemical
  - active surface area values (ECSA) 7706
  - battery 11504–11505
    - calendar life 11505
    - cycle life 11505
    - electrical efficiency 11505
    - energy capacity (EC) 11505
    - energy density 11505
    - power density 11505
    - specific energy 11505
    - specific power 11505
  - capacitors (EC) 3427, 3429, 3852, 6772
    - operation voltage 3429
  - cell 741, 769, 7741
    - electrolyte 741
    - separator 741
  - double layer capacitors (EDLC) 3852
  - energy storage 706
  - etching (voltammetric dealloying) 7740
  - hydrogen
    - production 3414
    - pump 8196
    - separation (EHS) 5143
  - mass transfer processes 10422
  - Ostwald ripening 8187
  - photovoltaics 3854
  - remediation 10420
    - electromigration 10420
    - electroosmosis 10420
    - electrophoresis 10420
  - supercapacitors 3426
  - surface area (ECSA) 7746
  - vapor deposition (EVD) 9853–9855
- electrochromic glazing 2843
- electro-conductivity 3434
- electrode 757, 3873, 3880, 3899, 3905, 6068, 6127
  - anode materials 3905
  - cathode materials 3899
  - fabrication 6133
    - winding process 6133
  - interface 3880
  - kinetics 6729
    - AC impedance 6729
  - reactions 746
  - surfaces 6045
    - decomposition 6045
  - tap density 757
- electrode-active material 7550
  - organic radical polymers 7550
- electrode–electrolyte contact 742
- electrode–electrolyte interface 6038, 6058
  - molecular dynamics simulations 6058
- electrodynamical torque 12143
- electrokinetic remediation 10428, 10430
- electrokinetic-permeable reactive barriers 10429
- electrolysis 3414, 5163
  - of water 5163
- electrolyte 743, 750, 3879, 3387, 3878, 3880, 3885, 3888, 6038–6042, 6045, 6054, 6060, 6068, 6084, 6127, 6131–6132, 6144, 9907
  - additives 6132, 6144
  - EC-based 6042
  - electrochemical stability 6064
  - electrode surfaces 6084
  - fluoride-type materials 3888
  - interface 3880
  - ion conduction 3878
  - ionic liquid-based 6060
  - materials 6127
  - membranes 8331
  - modeling of reductive decomposition 6041
  - molecular dynamics simulations 6045
  - non-aqueous 743, 750, 6068
  - Ohmic losses 3885
  - oxidative stability 6039
  - quasi-aqueous 3879
  - single-ion conductor 6054
  - solvents 6040, 6060
  - stability 6038
  - electrolyte systems 5887
  - window 742
- electrolyte/electrode interactions 6064
- electrolytic copper refining 1998
- electromagnetic
  - co-energy 22
  - compatibility (EMC) 696
  - disturbance 697
    - capacitive coupling 697
    - conductive noise 697
    - inductive coupling 697
  - force (EMF) 8851
  - interference (EMI) 696, 9683
  - photon 11376
  - radiation 2615, 3787, 4566, 7902, 8560–8561, 8577, 8929, 9651, 9706, 9713, 9803
    - radiometers 9713
  - torque 22, 29, 33, 41
  - waves 9620, 9628
- electromagnetism 3789
- electromagnet 6242, 6257, 6268
- electromechanical energy conversion 18
- electromigration 10421
- electro-mobility 1064, 3855, 3857, 3873



- electron 357, 3024, 3788, 8468
  - antineutrinos 11208
  - beam evaporation 9200
  - capture 8564, 8574
  - energy loss spectroscopy (EELS) 723
  - impact emission spectroscopy (EELS) 9402
  - mediator 3662
  - microprobe analysis (EPMA) 2439
  - relay 5177
  - transfer 5211, 7559
    - reactions 3657
  - transport pathways 357
- electron-beam irradiation 9101
  - antibacterial effects 9101
- electron-positron pair 8582
- electronic
  - brake distribution (EBD) 76
  - conductivity 2941, 2943, 2947, 3438, 3894, 3900
    - for direct hydrocarbon anodes 2941
  - control unit (ECU) 3861
  - dosimeters 3027
  - fare payment 91–92
  - fuel injection (EFI System) 1016
  - horizon method 2467
  - insulator 741
  - knowledge 4503
  - stability control (ESC) 76, 3053, 11188
  - stability program 3070
  - toll collection (ETC) 4946, 5023
  - waste 3443–3445
    - consumer-based 3445
    - producer responsibility (EPR) regulations 3445
    - regulation 3443
- electroosmosis 10421
- electrooxidation 8267
- electrophile 3660
- electrophoresis 10422
- electroporation 10797, 10869, 10899
- electrorefiner 7152
- electrostatic energy 8614
- electrostatic precipitator (ESP) 272, 1336, 1339, 1134, 1393, 1394, 1437, 1467, 2209, 3822, 3837, 5239, 8355–8356, 11711, 11800
  - specific collection area (SCA) 8356
- electrostatic repulsive energy 756
- electrotechnology 3007, 12138
- electrothermal reduction of metal oxides 9595
- electrowinning 6661
- elemental iron 10411
- elemental tritium 11055
  - gas 11048
  - inhalation 11055
- element-sensitive electron energy loss spectroscopy (EELS) 7744
- elephantiasis 12011
- elevated heat pump effect (EHP) 6748
- ELISA analysis 1653
- ELPylation 8078
- Elsbett engine 8089
- ELSY project 4056
- Elysia grandifolia* 3161
- Elysia rufesens* 3161
- embryo/embryonic
  - dormancy 9149
  - cells 6160
    - pluripotency 6160
  - gonad cells 10908
  - stem cell 6161, 6166, 6794, 7219, 10817, 10820, 10827, 10907
    - for the zebrafish 6794
  - zebrafish model 6793
- embryo-derived stem cells 10821
  - pluripotency 10821
- emerging contaminant 2079, 2082–2083, 9567
  - transport 2082
- emerging infectious disease 6184
- emission 247, 251, 253–254, 257–259, 264, 266, 271, 273, 9907
  - abrasion 253
  - cold-start 251, 257
  - control 251, 4960
  - evaporative 253
  - from transport 254, 273
  - mitigation measures 271
  - monitoring 183
  - legislation 264
  - of primary particles 259
  - process 250
    - combustion 250
  - reduction 161, 192, 266
    - program 185
  - restrictions 9907
  - resuspension 254
  - shipping 258
  - trading schemes 9031
  - transport-related 247
- e-motion 4580
- empirical partitioning isotherm 8611
- empirical valence bond model (EVBm) 3419
- enantiomer drug 8028
- enantioselective catalyst 7605
- encephalitis 5360, 8154
- enclosed fireplace 1361
- enclosure design 3699
  - human safety 3699
  - longevity 3699
- Encoal 2217
- endangered species act (ESA) 3354
- endemic
  - gill disorder 549
  - infectious disease 11090
  - malaria 11070
    - Southern malaria 11089
- endobiotics 12300
- endo-cellulase 8048
- endochitinase gene 10697
- endocrine
  - disrupting compound (EDC) 2084, 3260, 10534, 10668, 11961, 11963, 11965, 11973
    - characteristics 11963
    - removal 11973
    - treatment 11965
    - wastewater reclamation 11963
  - disruptors 3637
  - modulators 11961
  - system 3635–3636
- endocytosis 10899
- endogenous plant protein 8064
  - O-glycosylation 8064
- endoplasmic reticulum (ER) 3669, 8063
- endo-polygalacturonase 10699
- endoproteinase 4031
- endosperm 4555, 4560
- endothermic chemical transformation 9590
- enemy release hypothesis 5551
- energetic electron 8472
- energetic neutron 8582
- energetics 10156
- energization current 3010
- energy 672, 804, 867, 1122, 1199, 1478, 1570, 1574, 1584, 2349, 2847, 3457, 3502, 3848–3849, 11789, 11944
  - balance 2762, 4718, 4910, 10506, 11848
    - balancing models 7638
    - boundary limits 11848
    - charge system 3370
  - consumption 1026, 1477, 8115
    - in typical driving cycles 8115
  - conversion 1257, 1478, 3849, 5102
    - for auxiliary power 5102
    - losses 1257
    - path 1232
    - processes 3848, 4251
    - systems 2847, 4298, 4295, 9934
    - technology 1236
  - cost 2184

- crop 1098, 1109, 1225, 1506, 1536, 1538, 1545, 1565, 2632, 6020
  - grasses 6020
  - lignocellulosic 6020
  - production 1109, 1508
  - trees 6020
- debt 3307
- demand 1570, 4690
  - reduction 4690
- density 744, 3852, 3877, 5105
- discounting 7185
- efficiency 1584, 11537
  - factor 11848
  - products 3463
- energy-plus buildings 10333
- exchange stations 7853
- exploration 11934
- farming 1539
- flows 1299
- food-related 1299
- for transportation 3457
- fossil fuel–derived 867
- from processed refuse 11789
- from waste (EfW) 4958, 11690, 11841
- global demand 3502
- grasses 6024
- information administration (EIA) 2181
- innovation 12223
  - social acceptance 12223
  - stakeholders 12223
- maize (EM) 1117–1120
  - breeding 1116, 1120
  - cold tolerance 1118
  - German–Mexican inbred lines 1120
  - late maturity 1118
  - Southern European lines 1119
- management 3848
- market 12175, 12188, 12255
- mining 6681
- mix factor 4764
- modeling 10239
  - geometric acquisition 10239
  - tools 10245
- payback time (EPBT) 9432–9433, 9440, 9441
- performance 2073
- plants 1099, 1122
  - production 1138
- prices 7968
  - escalation 10453
- production 9906
  - renewable-based power production increase 9906
  - significant structural investments 9906
- recovery 2907, 5298–5300, 10584, 11846
  - by thermal treatment of wastes 5299
  - from MSW by incineration 5300
  - from waste 5298, 11846
- renewable sources 1199
- resources 2175, 3502
  - hydrocarbon-based 3502
- saving 11944
- security 1574, 7852, 10503
- solar-thermal 2349
- storage 672, 707, 3427, 3471, 3472, 3476, 3495, 3849
  - bill 10462
  - cookers 9492
  - policy 10457
  - requirements 3476
  - sector 804
  - systems (ESS) 6125
  - technologies 3472, 5102
- supply 1489, 1572
  - cost-efficient 1572
  - security 1489
- systems language 8858
- transformation 5408
- transmission 2867
- usage 7876
  - in a supermarket 7876
- yield 867
- energy–climate crisis 4121, 4129
- energy-from-waste (EfW) 5297
  - industry 5298
  - plant 5300, 5302
    - grate combustion systems 5302
- energy-generation technology 9432
  - environmental impacts 9432
- enforcement cost 5025
- engine
  - fuel efficiency 10493
  - multi-gear transmission 3382
  - power split hybrid drive train 3384
  - torque 5477, 8119, 11482
- engineered
  - geothermal system (EGS) 3501–3511, 4191, 4192, 4197, 4295, 5231
    - commercial acceptance 3505
    - definition 3501, 3502
    - development 3504, 3508
    - economic models 3506
    - global potential 3504
    - parasitic losses 3506–3507
    - possible road map 3511
    - power output 3507
    - power plant 3510
    - productivity index 3507
    - reservoir creation mechanism 3506
  - reservoir 3507, 3511
    - Saultz project 3505
    - stimulated deep reservoir 3503
    - sustainability 3509
    - technology 3504
    - water losses 3511
- landfills 4904
- osmosis 2915
- models 12210
- plastics 6541
- engineering–procurement–construction (EPC) 2924
- enhanced
  - actinide removal plant (EARP) 8408
  - bioremediation 1632
  - bus transit service 1872
  - geothermal system (EGS) 4187, 4233, 4246, 4323, 4331, 4350, 4407, 4422–4423, 11649
    - induced seismicity 4422
    - power stations 4323
  - gravity concentrators 2212
  - masonry stoves 1366
  - natural attenuation (ENA) 10430
  - oil recovery (EOR) 2251, 2254, 7802, 7806, 7808, 7814, 7827
    - chemicals 7827
    - cyclic steam injection 7808
    - thermal methods 7808
  - stoves 1365
  - water recovery 2160
  - weathering 1909, 1916
- enhancing human health 2262
- ensemble Kalman filter 2111
- Entamoebidae* 12049
- enteric virus 11876, 11985–11986, 11992
  - detection 11992
  - found in the environment 11986
- Enterobacteriaceae* 6324
- enterococcal surface protein (*esp*) gene 6328
- Enterococcus* 5057, 5064, 6319, 6323, 6325, 6331
  - *faecalis* 500
  - *faecium* 6328
  - treatment 5064
- enterotoxin 5062, 6328
- enterovirus 11989
  - infections 11989
- entomopathogen 5444, 5450–5451
  - for insect control 5451
- entrained flow
  - gasification/gasifier 1432, 1441, 1666, 5126
  - reactor 1457
- entrained solids 4249

- entrainment 10613
- entropy 9938
- environment/environmental 3267, 4070, 4415, 4534, 10075
  - adaptation 4070
  - assessment methods 8704
  - biosensing 1646, 1651, 1657
    - filter sampling 1651
    - liquid samples 1651
    - multiplex detection 1657
    - solid surface samples 1651
    - subtractive inhibition assays for large molecules 1657
  - carcinogenesis 3596
  - carcinogens 3610
  - careers 10033
  - contaminants 3519, 9567
    - solar photocatalytic degradation 9567
  - countermeasures 3515
  - damage 3445
  - decision support systems (EDSS) 3517, 3545
  - definition 4415
  - deviation 464
  - economic analysis 4788
  - economic sustainability assessment 4789
  - education 10019–10020, 10024–10025
    - awareness 10020
    - field trip 10025
    - public's awareness 10024
    - sensitivity 10020
  - E-factor 4619
  - engineering 2019, 10438
  - flow requirements 2795
  - fluid dynamics code (EFDC) model 9059
  - geology 3553
  - health 299, 6606
    - risk assessment 6606
  - impact assessment (EIA) 261, 6367
  - indicators 9186
  - information 10019
  - injustice 193
  - interaction 4070
  - journalism 10026
  - justice 191, 10028, 11339
  - law 3354
  - literacy 3203, 3207, 10033
  - management 3353, 5827
    - decision-making support systems (DSS) 5827
  - map 3184
  - medicine 225
  - modeling for radiation safety (EMRAS) program 8439
  - models 7010
    - collective parameters 7010
  - monitoring 1646
    - trends 3267
  - negotiations skills seminars 10027
  - outreach 10019
  - partitioning 10075
  - performance index (EPI) 196
  - policy 187, 3288
  - pollutants 4893
  - product declarations (EPD) 9038
    - life cycle assessment (LCA) 9038
  - protection 191, 2687
  - protection agency (EPA) 1500
  - radioactivity 3583
  - regulation 7824
  - remediation 10436, 10438–10439, 10441, 10446
    - advances in science 10439
    - risk assessment 10441, 10446
    - scientific measurements 10446
    - sustainability principles 10438
  - restoration 3516, 3584
  - risk factor 67
  - sensitivity 412, 463
  - site assessments (ESA) 2438
  - stewardship 10019, 10024
  - sustainability 566, 10321, 10503
  - tobacco smoke (ETS) 3632, 3640, 3645
  - toxicants in children 3627
    - effects during gestation 3627
    - effects on germ cells 3627
  - toxicants 3633
  - toxicity 3663, 3665
    - non-radical mechanisms 3665
  - toxicology 3586, 3595, 3620, 3655, 3670
    - carcinogenesis 3595
    - children at risk 3620
    - oxidative stress 3655, 3670
  - transport models 11019
  - water requirements (EWR) 1545
  - wicked problems 4534
- enzymatic engineering 10830
- enzymatic hydrolysis 967, 972, 976
- enzyme 8024, 8052
  - classification (EC) number 8025
  - storage 8052
- enzyme-linked immunosorbent assay (ELISA) 5383
- eosinophilic granuloma 12032
- epicycle 2100
- epidemiological model 5352
  - within-host dynamics 5352
- epigenetics 2971
  - instability (EIS) 3607
- epigenome 6166
- epilancin 504
- episomal
  - transgenesis 10821
  - vectors 10906
- epistasis 494
- epoxidation catalyst 7602–7603
  - Jacobsen-type 7603
- epoxide
  - hydase 1634
  - hydrolases 12301
- Epstein-Barr virus (EBV) 5000
- equal temperature split 4275, 4278
- equation 5675
  - of motion 627
- equatorial belt 9637–9638
- equilibrium
  - climate sensitivity (ECS) 2516
  - tidal theory 10614
- equine infectious anemia virus 10905
- equipment grounding 3004
- equivalent
  - network 12154
  - water thickness 4568
- Equus ferus caballus 1797
- ErbB3 3161
- ergonomic design 10278
- Ergun equations 5306, 5308
- Eribulin 3158–3159
- erosion 1918, 3705, 3707, 3710, 3723
  - on agricultural land 3707
  - use of fallout radionuclides 3710
- erucic acid 4557
- erythema 4906, 11378
- erythromycin 500, 505
- Erythroneura elegantula* 156
- erythropoietin 8064
- Escherichia coli* 5059, 6319, 6325, 6328, 6622, 7332, 7669, 8077, 8761
  - isotherm 7678–7679
  - toxin genes 6328
- essential amino acid 1692
  - availability 1692
- essential fatty acid 1696
- ester-carbonate compound 6043–6044
- esterification 928
- ester 10667

- estimated breeding value (EBV) 419, 422, 443, 446, 459, 2786, 9368, 9373, 9375, 9378
- selection 9375
  - accuracies 9368
- estradiol 6154
- estrogen 11963, 11974, 11976, 11978
- glucuronides 11971
  - biodegradation 11976
  - receptor (ESR) 10892
  - sorption 11974
- estuarine ecosystems 11913
- estuary/estuarial 7338
- effect 2796
  - phytoplankton productivity 7338
  - redox processes 7338
- ethane 3994
- ethanol 303, 359, 962, 978, 980, 982, 996, 999, 1005, 1006, 1012, 1016, 1018–1020, 1022, 1028, 1222–1224, 1477, 1504, 2242, 3633, 3859, 5463, 5466, 5473, 5478–5480, 5493, 8175, 10507–10508, 10510, 10527, 10641, 11316, 11430–11431, 11449
- blends 5493
  - Brazilian 1005
  - experience 1018
  - taxes 1012
  - consumption 10641
  - health problems 10641
  - corn-based 1504, 10527
  - dehydration 996, 999
  - engine fleets 1016
  - first-generation 980
  - from sugarcane 982, 1005
  - agrochemicals 1010
  - air pollution 1010
  - soil quality 1010
  - plant 978, 10510
  - price 1012
  - production 1222
  - cycle 11943
  - programs 1019
  - second-generation technologies 1022
  - transportation 1019
  - use 1224
  - of agricultural land 1020
- ethephon 6210
- ether 10666, 11445
- ethyl
- acetate 3935
  - alcohol, see ethanol
  - methanesulfonate mutagenesis 2704
  - methyl carbonate (EMC) 6127
- ethylbenzene 4590
- ethylendiamine 8291
- ethylene 3961, 3994
- carbonate (EC) 6040, 6042, 6044, 6070, 6127
  - electrolytes 6085
  - one-electron reduction 6042
  - two-electron reduction 6044
  - epoxidation 3943
  - glycol 381
  - diacetate 11830
  - propylene diene monomer [M-class] rubber 3003
  - refrigeration 3961
  - response factor (ERF) 2706, 2713
- ethylene-expanded liquid 3943
- ethylene-propylene-diene (EPDM)
- copolymer 8744
  - monomer 7724
- ethylnitrosourea (ENU) 6794
- ethyl-tertiary-butyl-ether (ETBE) 1042
- Eucalyptus* 1288–1289, 1293, 1539
- species 1289
- euchromatin 2553
- Euclidean distance 2465–2466, 2470–2471, 10598
- metric 10610
- eukaryotic organisms 1654
- Euler equation 12065, 12075
- Eulerian model 261, 11284
- Eulerian-integral model 10990
- euphausiids 12033
- eurobarometer 10872
- European
- food safety authority 10773
  - landscape convention 10387
  - lead-cooled system (ELSY) 4056
  - list of waste 11592
  - soil moisture and ocean salinity satellite (SMOS) 8931
  - waste incineration plants 11734
  - wind atlas 6600
  - workplace regulations 2879
- europasma gasification
- process 8109
- eutrophication 943, 1598, 1620, 1935, 1942, 1950, 2502, 3044, 3783
- in dams 11942
- evaluated nuclear data files (ENDF) 8587
- evaluated nuclear structure data files (ENSDF) 8587
- evaporation 253, 257, 2899
- cooling 897, 4709, 9526, 9528
- evapotranspiration 1545, 3213, 4690, 4718, 4740, 5621, 7246
- coefficient (ETC) 1102
- evidence-based building design
- 5340–5341, 5343
- economic performance 5340
  - hospitals 5340
  - office buildings 5343
  - schools 5341
- evolution/evolutionary 10081
- biology 4529, 9371, 9389
  - scientific controversy 4529
  - genetics 468, 9380
- E-waste, see electronic waste
- EWITS study 12179
- excavating machine 3032
- excess air factor 2166
- excessive lead–210 3715, 3730, 3733, 3737
- depth distributions 3737
  - measurements 3730, 3737
  - sedimentation rates 3733
- excitation energy 3794, 3801
- exciton-blocking layer (EBL) 7574
- exclusive economic zone (EEZ) 7321, 7384
- exergy 5518, 5520–5521, 11766
- destruction 5521
  - system efficiency 9592, 9594
- exhaust gas 6816
- recirculation (EGR) 267, 6849
  - stream 8091
  - thermal energy 6816
- exo-cellulase 8048
- exogenous carcinogen exposure 3610
- exotic germplasm 8017, 8019
- exotic oils 6897
- expanded natural graphite (ENG) 9613
- expansion–intensification agricultural model 153
- expendable bathythermograph (XBT) 2500
- experimental
- breeder reactor II (EBR-II) 4060
  - car 11196–11197
  - observer performances 11196
  - test conditions 11197
  - validation of observers 11197
  - technology demonstration reactor (ETDR) 4054
  - vehicle 3060
- explanatory knowledge 4535
- exploration drilling 4417, 6417
- explosives 10156
- export 1489
- exposome 3658
- express
- bus 6005, 6006
  - corridors 6006
  - services 1872

- lane 5023, 5028, 5031, 5042
  - earned credits 5042
  - users 5029
- expressway 5032
- extended Kalman filter 2472, 3059, 11194
- extended producer responsibility 3445
- extended X-ray absorption fine structure (EXAFS) 6076
- extended-range electric vehicle (EREV) 11509
- extending dynamic range 11109
  - reliably 11110
  - technologies 11109
- extensive ecosystem 3526
  - countermeasures 3526
  - remedial actions 3526
- extensive marine aquaculture 514
- exterior shading devices 3689
- external dosimetry 3023
- external quantum efficiency (EQE) 6575
- extraction boreholes 4809
- extraterrestrial irradiance/radiation 10625, 10627
- extraterrestrial spectrum (ETS) 9707
- extreme ultraviolet (EUV) 9708
- extreme wave 7404
- extreme wind 7402
- extruded cable 11170
  - core manufacture 11170
- eye closure 3121
  - duration 3121
  - frequency 3121
- eye-dose equivalent 3026

## F

- FabH 500
- fabric filter 4960, 4990, 8357–8358, 11807, 11815
  - filtration media 8357
- facade 3675, 3677, 3680, 3683, 3686–3687, 3690, 3692, 3694, 3697, 3699, 3702
  - climate-responsive 3687
  - daylighting as dominant source of lighting 3680
  - designed to manage water 3697
  - double envelope 3690
  - effective maintainability 3699
  - glare control 3687
  - individual access to the natural environment 3677
  - innovation through systems integration 3702
  - load balancing 3692
  - mean radiant temperature control 3690
  - minimizing excessive heat losses or heat gains 3686
  - natural ventilation 3683
  - natural weathering 3699
  - passive solar heating 3694
  - rain screens 3690, 3697
  - shading 3687
  - temperature control 3687
- facial action coding system (FACS) 3121
- facilitation 3281
- factorial regression model 4082, 4086
- factual knowledge 4534
- faculae 9800
- Faecalibacterium* 6327
- falciparum malaria 6295, 11076–11077, 11083
  - resistance to chloroquine 11083
- Falkenmark's water crowding indicator 2326
- fallout radionuclide 3705–3706, 3709, 3711, 3720–3721, 3723, 3742, 3744–3746, 3749, 3755, 3758, 3760
  - activity 3749
  - as tracers 3723
  - biological 3721
  - corers 3746
  - depth distribution 3721
  - diffusion-like processes 3721
  - field techniques 3745
  - for sediment source fingerprinting 3755, 3758
  - for tracing suspended sediment sources 3742
  - in soil erosion and sedimentation 3749, 3760
  - in the soil 3718
  - inputs 3711
  - inventory 3749
  - measurements 3748
    - Germanium detectors 3748
    - uncertainty considerations 3748
  - laboratory techniques 3745, 3746
  - sediment source 3744
  - sources 3711
  - storage in soil 3720
  - techniques 3746
- fallow 2748
- FAME 1466
  - scrubber 1466
- family biotic index 3273
- FAO ecosystem 534
- Faradaic materials 3499
- Faraday constant 745, 3875, 3927, 5105, 5139, 5157
- fare collection system 92
- far-infrared (FIR) cameras can 11115

- farm/farming 2728, 2729
  - animal 476, 478, 482–483, 486, 1757, 1773, 1783, 1785, 8001, 11402
    - biodiversity 1773
    - economic traits 478
    - fine mapping 486
    - genetic resources 1783
    - genetic variation 1785
    - production 7973
    - QTL mapping 486
    - random breeding population 482
    - UV hazards 11402
    - welfare 1785
  - aquaculture resource management (FARM) 552
  - bivalves 1960, 1963
  - carbon 165
  - fit with nature 540
  - income 4435
  - multiplication unit 396
  - new technologies 2728
  - productivity 10714
  - system 151, 394, 2741, 2750
    - diversification 151, 2750
  - terminal sires 396
  - traditional 2729
- farmer 4507
  - farmers' association 395
  - suicides in India 4507
- FARMSCAPE tools 9327
- farnesyl transferase 7
- fasciolosis 5361
- fast breeder
  - reactor (FBR) 7104, 7135, 11216
  - test reactor (FBTR) 4060
- fast bus 5989
- fast flux test facility (FFTF) 4060
- fast ignition 7171
- fast neutron 7090
- fast pyrolysis 1520, 1522, 11445
- fast-neutron-spectrum breeder reactor (FBR) 7103
- fatigue 3112, 3120, 3123, 3129
  - detection 3120, 3129, 3123
    - algorithms 3112
  - quantifying 3129
- fatigue-related accident 3109
- fat 1678
- fatty acid 927–928, 1681
  - biosynthesis 360, 500
  - ethyl esters (FAEE) 927, 5488
  - methyl esters (FAME) 928, 1042, 1044, 1206, 1219, 1443, 3945, 5488, 8083
- faulting 3250
- favorable free 9596

- feasibility study (FS) 2009
- feature-level fusion 6954
- fecal
  - bacteria 6329, 7679, 7682
  - coliform 6324, 6325, 11877, 11879
  - contamination 6624, 8763
  - indicator 6319, 6322–6323, 6333–6334
    - applications 6333
    - bacteria (FIB) 7671, 9164
    - detection 6323
    - important attributes 6322
    - rapid methods 6334
    - risk of pathogen exposure 6333
  - microbes 7674
  - microorganisms 7670
  - pollution 6319–6320, 6323, 6326, 6329–6331, 6333, 8761
    - host-associated marker 6331
    - impact on coastal waters 6320
    - microbial source identification 6330
    - quantification of bacterial indicators 6329
    - sources 6326
    - viral indicators 6329
    - waterborne disease 6320
  - source identification (FSI) 6330
- feces composting 9980
- fed aquaculture 540, 544, 577, 7264
- federal facility compliance act 10018
- feed 2682
  - chute 4962
  - hopper 4962
  - pump analysis 4263
  - security 2682
  - slurry 2204
- feedback control 51
- feedback loop 10068
- feeder
  - circuits 2980
  - protections 3011
  - voltage 2978
- feed-in tariff (FIT) system 1099, 10340, 12263
- feedstock 1270
  - availability 1270
  - suitability 869
- fenestration industry 2838
- Fenton
  - chemistry 7607, 9575
  - reaction 6542
  - reagent 7607, 9575
- Fenton-like reagent 9575
- fermentation/fermenter 962, 973, 975, 988, 993–994, 999, 1091, 1093, 1132, 1137, 1181, 1223, 1613, 2117, 3914, 9940
  - energy savings 999
  - gas 9940
  - residues 1137
    - utilization 1132
- Fermi
  - constant 6079
  - contact shifts 6080
  - energy 754
- ferredoxin 1479
- ferric
  - citrate 9577
  - iron 9576
    - photoreduction 9576
  - iron–water complexes 9576
  - oxalate 9577
  - oxyhydroxide 10414
- ferrierite 4590
- ferrite magnet 28
- ferromagnet 6247
- ferromagnetic circuit 6248
- ferroresonance 3019
- ferrous contaminants 8805
- ferrous metals 8811
  - recycling 8811
- fertility 10889
- fertilization management 2663
- fertilizer/fertilizing 1103, 1135, 2578, 2742, 3768–3770, 3772–3776, 3778–3784
  - additives 3773
  - ammonia emissions 3781
  - ammonia-based 3782
  - cost of nutrients 3775
  - decision support 3779
  - distribution 3770
  - effects on agricultural productivity 3774
  - emissions 1135
  - energy cost 3783
  - environmental benefits 3781
  - industry 2747
  - greenhouse gas emissions 3781
  - human health 3783
  - in organic farming 3780
  - inorganic 3769
  - macronutrients 3769
  - management 3776, 3778, 3784
  - marketing 3770, 3773
  - mining 3770
  - nutrients 3769
  - optical sensor 3780
  - phosphorus 3778
  - potassium 3778
  - precision agriculture 3779
  - prices 3770, 3773
  - recommendations 3779, 9328
  - resource availability 3783
  - science 3768
  - soil
    - acidification 3782
    - tests 3775
  - subsidies 3774
  - sustainability 3769–3770
  - technology 3768
  - transport costs 3772
  - use 2687
    - sustainability 2687
  - water pollution 3781
  - yield maps 3779
- fetus 3626
  - exposure to toxicants 3626
- fiber 1678, 8827
  - dietary 1678
  - fiber filter 10107
  - insoluble 1678
  - recycling 8827
  - soluble 1678
- fiberboard 2410
- fiber-optic communication networks 12083
- fibroblast 10827
- fibropapillomatosis 6193
- Fick's law 2017–2018, 2021, 3810, 3812, 9134, 10963, 10991
- field
  - crops 11398
  - orientation
    - algorithm 42
    - principle 36
  - reconstruction method (FRM) 44
  - relevant for driving (FRD) 3122
- field-oriented control 36
- field-reversed configuration (FRC) 7167
- filamentous algae 3563
- filter ash 11731–11734
  - Bamberg model 11732
  - characterization 11731
  - disposal practice 11731
  - Ferrox process 11733
  - stabilization processes 11732
  - thermal treatment 11732
- filter cake 1006
- filter-feeding fouling organisms 1965
- filtration collectors 1393
- final renewable fuel standard 1500
- final sink 10581
- fine coal 2213
  - dewatering 2213
- fine mapping 487, 2712

- fine particulate pollution 229
- finfish 7265
  - aquaculture 1935, 6365
  - cage culture 1967
  - culture 6762
    - production 7265
- finite impulse response 56
- fire code requirement 1031
- fire corals 12046
- fire tube boiler 1343
- fired brick 3833, 3834
  - manufacturing 3834
- fireplace 1360
- fireweed 12047
- firewood 1232, 1368
  - boiler 1356
- Fischer–Tropsch (F-T)
  - diesel 935, 1054
  - fuels 1049, 1062, 1584
  - hydrocarbon production 1589
  - process 2224, 3971, 5472, 5473, 5491
    - reaction pathway 3971
  - reaction 936, 2240, 2252, 3975, 5225, 5226
    - Anderson–Schultz–Flory (ASF) distribution 3975
    - catalysts 3975
    - product water 2252
  - stoichiometry 3963
  - synthesis 922, 1428, 1442, 1585, 2236, 3845, 3958, 3964, 3970, 3972, 3976–3977
    - catalyst beds 3976
    - chain initiation and propagation 3972
    - chain termination 3972
    - commercial activities 3977
    - formation of C<sub>1</sub> species 3972
    - kinetics 3976
    - product upgrading 3977
    - reactors 3976
- fish 9165, 10089, 11408
  - aggregation devices 3566
  - aquaculture 558, 1942
  - as sentinels 9165
  - cages 1949
  - culture systems 10799
  - diversity 6181
  - farm/farming 522, 583, 591, 1930, 1942, 1947, 3557, 3560, 3576, 3580, 3581
    - ecological footprint 3581
    - farm escapees 3567
    - net pens 3580
    - open-ocean 3581
    - worker safety 583
  - habitat projections 5697
    - under future climate scenarios 5697
  - habitat simulation program 5696
  - health management 3580
  - mariculture 9120
  - meal 3574
  - oil usage 3574
  - UV hazards 11408
- fishery 535, 540, 546, 550, 592, 6182–6183, 6387–6389, 6391, 6393, 6395, 7390, 11408
  - artisanal 592
  - ecosystems 540, 2266
  - governance 6393
  - habitat destruction 6182
  - hatchery-based 6388
  - interactions 6183
  - management 546, 6387, 6389, 6391
  - science 6388
  - scientists 6395
  - stocks 6387
    - enhancement 6388
  - UV hazards 11408
  - wastes 12020
- fish-hunting cone snail 3165
- fish-in to fish-out ratio 5899
- fishing 2504
  - down the food chain 3576
  - regulation 2504
  - technology 512
- fissile
  - fuel 7179
  - isotope 3791, 3819, 7178
  - nucleus 3791
  - nuclides 7089
  - plutonium 7104
- fission 3791, 3793–3796, 3799, 3803, 3806–3807, 3809, 3813, 3818, 7088–7090, 8560
  - activation energy 3793
  - chain reaction 7089
  - energy 7090
  - fissionable materials 7089
  - fragments 3799
  - neutron-induced 3794
  - neutrons 3809, 8567
    - production 7089
  - product 3791, 3818, 7152, 8600
    - decay heat 7152
    - nucleus 3795
    - poisons 3807
  - reactor 3790, 3799, 8567
    - cooling system 3799
    - design 3796, 3799, 3803
    - development 3818
    - fuel reprocessing plant 7179
- heavy elements 3790
- performance 3813
- physics 3787
- source 3806
- fission-product photon 8570
- fitness ratio 10067, 10072
- fixed bed reactor (FBR) technology 2243
- fixed gear ratio single gear box 3370
- fixed bed gasifier 1430, 1451
- fixed-gearing transmission 11535
- fixed-speed turbine 12150, 12160, 12161, 12164, 12165
  - start-up 12161
  - with a variable rotor resistance 12150
  - with active Pitch Mechanism 12165
- flagella 5050
- flared natural gas 6811
- flash distillation 2899
- flash flood 1561
- flash power station 4309
  - bottoming organic rankine cycle 4309
- flash pyrolysis 1213
- flash steam rankine cycle 4276
- flat toll 5030
- flatfish 519
- flat-plate collector 9524
- flatworm 3152
- flavin adenine dinucleotide (FAD) 1684
- flavin mononucleotide (FMN) 1684
- flavonoid 6522
- flax gene 10699
- fleet management 91
- flexible AC transmission system (FACTS) 8987
- flexible bus 1861
- flexible paratransit 1858
- flexible-fuel vehicle (FFV) 1004, 1616, 5465, 10491, 10507, 10527, 11432
- flicker 3004
  - emission 12160
  - severity index 12157
- float/floating
  - drum digesters 1153
  - ice 2765, 2772, 2774
  - offshore wind turbine (FOWT) 7395, 7416
  - technology 3231
  - voltage 5883
- float-zone-grown monocrystal 9201
- flood/flooding 917, 2789–2790, 2792, 7699, 8943, 10751
  - basalts 1912
  - control 2790
  - control dam 3744
  - deposits 3760



- emergency alarm systems 2792
- frequency 2321
- generation 10615
- inundation 3736, 3754
- management 4687
- prevention 5827
- regulation 2790
- remote sensing 8943
- risk 11334
- tide 10615
- flooded electrolyte lead acid 8747
- floodplain 3735–3737, 3740–3741, 3753–3754
  - CIRCAUS model 3740
  - cultivated 3737
  - deposits 3754
  - microtopography 3736
  - profile 3723
  - sedimentation rates 3753
  - surface 3736, 3741
- floral initiation 2646
- floral pre-meiotic differentiation 2646
- floral sterility 10394
  - heat-induced 10394
- floret 2542
- flotation
  - collectors 2216
  - machines 2202
- flour fortification initiative (FFI) 1688
- flow cytometry 6527
- flow matrix 3308
- flow modelling 11277
  - individual buildings 11277
  - surrounding streets 11277
- flower initiation 2647
- flowering 2552, 2646
  - plants 1140
  - time 2556, 2697, 4076
- flowing property 9844
- flue gas 171, 1254, 1323, 1336, 1345, 1386, 1389, 1393, 1395, 1468, 2152, 2272–2274, 2278, 3822, 3966, 4960, 4975, 4987, 4990, 4993, 5266, 6451, 6463, 6998, 8354, 8359, 8361, 8365, 11784, 11809
  - aerosol concentration 1254
  - cleaning 1448, 1610, 5238, 5249, 5269, 5289
    - equipment 2273
  - composition 5266
  - condensation 1395
    - installation 11784
  - desulfurization 171, 2278, 3822, 8359, 11702
    - scrubber material 11702
  - emissions 1389
  - fly-ash concentration 1254
  - of full-scale combustors 6998
  - quality 4993
  - recirculation 2171, 2272, 4968, 4984, 6463
  - treatment 1249, 1393, 1468
  - volume flow 2274
- fluid bed combustor 11804
- fluid catalytic cracking 7832
- fluid density interface 2052
- fluid enthalpy 9008
- fluidization 1432
- fluidized bed
  - combustion plants 1244
  - reactors 7956
  - gasification 3998, 5127
  - gasifiers 1431, 1456, 1666, 11443
  - gasifying melting systems 11586
  - incinerators 5278, 5280
  - systems 2273, 11855, 11861
    - limitations 11855
    - reference projects 11861
    - selected concepts 11861
    - technical features 11855
- fluidized catalytic cracking 2246
- fluke 12023
- FLUMAGIS project 5828
- fluorenylidene biphenylene 6551
- fluorescein 4209
- fluorescence/fluorescent 11377
  - in situ hybridization (FISH) 2602, 5384
  - radiation 8574
  - yield 8575
- fluoride 786
- fluorinated polymer 6539
- fluorine 6504
- fluorite anode 2958
- fluoroelastomer 7724, 7872
- fluorophosphate 727
- fluoropolymer 9582
- fluorous solvent 7601
- fluquinconazole 6209
- fluridone 9148
- flux
  - angle 42
  - correction 2512
  - equations 2027
  - linkage equation 40
  - weakening 35
- fluxomics 6532
- flux-reversal/switching permanent magnet machine 11529, 11530
- fly ash 1322, 1336, 1363, 2195, 3820–3825, 3827–3828, 3830–3831, 3834–3836, 3838, 4001, 4867–4868, 4872, 5237, 5253, 6489, 8352, 8354, 10583, 11583, 11720, 11739–11740, 11742, 11746, 11800
  - applications 3827–3828
  - bricks 3835
  - chemical composition 11740
  - classification 3825
  - collection systems 3822, 3825, 3830
  - construction products 3823
  - environmental impacts 3836
  - heavy metals concentrate 11800
  - in concrete 3830
  - management 3824
  - metals 11740
    - chlorides 4872
  - particle (grain) size distribution 11742
  - production 3821
  - properties 3825
    - in concrete applications 3831
  - rate of utilization 3821
  - soluble salts 11742
  - toxic metals 11742
  - toxic trace elements 3838
  - utilization 3824
  - vitrification 11583, 11746
  - washing 11746
- flyback converter 692
- flying capacitor method 703
- flywheel 5107–5110, 5114
  - brushless DC motor (BLDC) 5110
  - energy capacity 5108
  - induction motor 5110
  - permanent magnet (PM) 5110
  - power capability 5110
  - switched reluctance motor (SRM) 5110
  - system 5110
    - efficiency 5110
    - theoretical specific energy 5109
- flywheel/ultracapacitor system 5114
- foam cement 4403
- focused identification of germplasm strategy (FIGS) 2734
- fodder beet 1112
- fodder cropping 1127
- foehn wind 11299
- fog 3138–3140, 3142
  - collision
    - detection 3140
    - risk 3140
  - contrast sensitivity 3142
  - density
    - condition 3139
    - values 3138

- investigation and dispersal operation (FIDO) 4106
- reduced visibility 3138, 3140
- folate 1710
- folding bike 814
- folic acid 1684, 1710
- follicle maturation 10891
- follicular stimulating hormone 6154
- food 576–577, 837, 1746, 2289, 2682, 2685, 2687, 2721, 2736–2737, 2743–2744, 2754
  - animals 10858
    - health status 10858
  - chain 822–825, 949, 3576
    - biomagnifications 822
    - contamination 7668
    - in town 949
    - magnification principles 824
    - magnification 825
    - modeling 824, 8427
    - theory 822
    - waste 824
  - contamination 4897
  - crops 1545, 2649, 8044
    - effect of drought 2649
    - generally regarded as safe (GRAS) status 8044
    - non-food crops 8044
  - demands 1566
  - food and feed regulation 10775
  - GMO-derived 2289
  - industry 1180
  - insecurity 1676, 1746, 2685, 2737
  - methylmercury-containing 837
  - processing 9487
  - production 577, 1546, 1741, 2536, 2744, 2754, 10853
    - from farm animals 1741
  - safety 6614, 10769
  - safety hazard 9082
    - seafood-associated 9082
  - security 1750, 2529, 2682, 2687, 2721, 2736, 2743, 10714
  - traceability 576
  - warmer 9493
  - waste 11657, 11833
    - food web 3301, 11408
- food and feed regulation 10775
- food-feed-fuel 1566
  - market mechanism 1566
- foot-and-mouth disease (FMD) 411, 1759, 5351, 5360, 10860
  - mathematical models of the spread 5351
  - virus (FMDV) 2970, 8075
- footprint on the oceans 3558
- footrot 1758
- forage
  - cropping 1127
  - harvesters 1130
  - mixture 1114
- forced-draft cooling towers 9533
- forecast 2119, 2131, 2132, 2523
  - models 8921
  - overconfident 2131
  - probabilities 2129
  - monsoon rainfall 6741
  - reliability 2131
  - retrospective 2131
  - seasonal-to-interannual 2132
  - skill 2125
  - uncertainty 2131
- foreign breed 392, 394
- foreign DNA 10901, 10906
- forest 1538, 3315, 3328–3331, 3533
  - change 3290
  - disturbance 3326, 3329
  - ecosystem 3328–3330
  - fire 8944, 8945
    - remote sensing 8944, 8945
  - gap models 3292
  - management 3289, 3329
  - modeling concept 3289
  - models 3290
    - individual-tree-based 3290
  - regeneration processes 3329
  - remediation strategy 3533
  - residues 1538
  - spatial heterogeneity 3329
  - succession 3329, 3331
- forestry 1567, 1573, 3289–3291
  - by-products 1567
  - JABOWA model 3291
  - management 1539
  - models 3291
    - gap model 3291
  - residues 1573
  - site index 3289
- formaldehyde 303, 3989, 10639
- formaniferans tube worms 3151
- forward converter 692
- forward looking infrared radiometer (FLIR) 11640
- forward osmosis (FO) 2915, 10540
  - bioreactors (FO-MBR) 11890
- fosmidomycin 502
- fossil 3844
  - biofuel 552
  - carbon 4759
    - dioxide 1598
  - diesel 1601
  - energy mix factors 4764
  - energy 3844, 9620
  - fuel 161, 164, 170, 348, 608, 668, 867, 870, 872, 930, 1040, 1099, 1217, 1584, 1601, 1608, 2175, 2191, 3462, 3928, 3929, 3934, 4120, 4121, 4225, 4376, 4762, 5174, 5462, 6566, 6806, 8174, 8348
    - combustion 8887, 8895
    - emission 116
    - energy 1351
    - price fluctuations 1584
  - heat mix 4770
  - hydrocarbon 1300
  - primary energy sources 9935
  - resource 2222, 3844
- fouling index 10540
- foundation pile 4147
- founder animal 10876
- foundry sand 11702
- Fourier transform infrared (FTIR) spectroscopy 5386, 10539
- Fourier transformation 6073, 10972
- Fourier transform-ion cyclotron resonance MS (FT-ICR MS) 1186
- four-pole induction motor 5091
- four-wheel vehicle model (FWVM) 3055, 11189–11190
- fowl cholera 641
- fraction of absorbed photosynthetically active radiation (fAPAR) 7902, 7925
  - satellite observations 7925
- fractional interception 2618
- fractionated aquaculture system 544
- fractured aquifer 4795, 4796, 4798
  - coal tar contamination 4798
- fragmented infrastructure 10303
- Francisella* 1932
- free energy 3875
- free estrogen 11967
- free fatty acids (FFA) 1045
- free ion activity model (FIAM) 10052
- free oxide 2432
- free radical chain reactions 3663
- free radical polymerization 2945
- free sugar 11435
- free water surface 11893
- free-air controlled enhancement (FACE) 3225
- free-driving condition level 3094–3095
- free-rolling buildings 3677
- freeway busway 1858, 1875
- freeway traffic surveillance
  - applications 11457
- freezing nuclei 659
- freezing point 2766
- Freidel-crafts reaction 4606

- freight railroad 5964
  - vehicle 5957
- freight rapid transit 7792
- freight train 5965
- frequency control 8987
  - interconnection queue process 8987
- fresh-air ventilation 7631
- freshwater 1546, 6318, 7669, 10292
  - availability 10292
  - ecosystems 2065, 3316
  - fecal indicators 6318
  - fish 10089
    - freshwater fish farming 525
  - microbial contamination 7669
  - ornamental fisheries 6187
  - resources 2320, 2322, 2332
    - impact of climate change 2320
  - shrimp 8202
  - supply 2078
  - system 2064
- Fresnel
  - approximation 2353
  - collector 2351, 6031
  - surface 2868, 2870
- Freundlich
  - isotherm 7678, 8612, 8618, 10968
  - partition coefficient 8612
- Friedel–Crafts alkylation 4590, 4598, 4625, 4631
- fringing reef 2491
- FROG (free ranging on grid) technology 7792
- froth flotation 2202, 2212, 2216, 2412
- frother 2202, 2216
- Froude number 10993
- frozen semen 396
- frozen soil 3214, 3220–3221
- fructose 1278
- fruit maturity 2649
- fruit tree 2652
- F<sub>0</sub> founder bird 645
- fuel 1037, 1254, 1287, 1303, 1319, 1327, 2255, 2381, 3907, 3911, 3915, 5139, 5245, 5251, 5284, 5520, 6721, 9822
  - assemblies 8590
  - batteries 3429
  - carbon deposition 3907
  - characterization 9822
  - chemical energy 6721
  - clad 7196
  - combustion 251
  - consumption rate 11493
  - conversion efficiency 5510, 5520
  - cycle 10503
    - pump-to-wheels (PTW) stage 10503
    - well-to-pump (WTP) stage 10503
    - well-to-wheels (WTW) metric 10503
  - economy 3483, 3500
    - of a vehicle 10492
    - simulation 3486
  - efficiency 10482
  - elementary analysis 5251
  - exergy 5520
  - flexibility 1037, 3907
  - from solar energy 9589
  - gas 1462, 2171, 3998
    - tar removal 1462
    - treatment 1462
  - gasification 1327
  - heat energy 6833
  - heating value 1303
  - higher heating value (HHV) 5245
  - impurity 3911, 3915
  - incomplete oxidation 1319
  - infrastructure 2255
  - injection units 3861
  - knock 5532
  - legislation 267
  - nitrogen 5309
  - oil 4378
    - carbon pollution 4378
  - oxidation 2939, 2946
  - particles 1254
  - processing 5139, 5141, 5144–5145, 5157, 7879
    - accidents 8502
    - endothermic reforming reactions 5139
    - endothermicity 5141
    - exothermic fuel cell reactions 5139
    - steam methane reforming 5144
    - steam reformation (SMR) 5157
    - water–gas shift (WGS) 5144, 5157
    - water–gas-shift (WGS) reaction 5144
  - procurement 2282
  - refuse-derived 5284
  - savings 6016
    - light rail transit (LRT) 6016
  - solar thermal production 2381
  - specification 9822
  - storage 1030
  - utilizations 5156
    - electrochemical efficiency 5156
    - factors 5139
    - reaction loss 5156
  - washing 1260
  - waste 6449
  - wood-derived 1287
- fuel–air
  - cycle analysis 5513, 5515
  - mass flow ratio 6819
- fuel cell 1032, 1413, 1462, 2935, 3385, 3495–3496, 3847, 3849, 3858, 3861–3863, 3868, 3870, 3872–3873, 3877, 3880–3881, 3883, 3886, 3926, 3928, 3930, 5141, 5161, 6721–6722, 6725, 6832, 7694, 7695, 7700, 7703, 7706, 7713–7714, 7717–7719, 7732, 7740, 7741, 7867, 7876, 8206, 8207, 8210–8211, 8217–8219, 8223–8226, 8228, 8240, 8245, 8266, 8290, 8292, 8329, 8344, 10516
  - accelerated stress tests 7719
  - activation losses 7706
  - air
    - bleeds 7718
    - contaminants 7713
  - alternative approaches 3886
  - architecture 8218
  - as a power system 3863
  - carbon 3858
    - corrosion 7718
  - catalytic activity 8292
  - cathode catalyst 7740
  - classification 3880
  - commonly used fuels 3861
  - CO poisoning 8226
  - comparison to alternate technologies 3847
  - contaminants for catalysts 7717
  - costs 7700
  - critical parameters 8210
  - critical specifications 8210
  - current–voltage characteristics 3495, 8210
  - definition 3873
  - efficiency 9600
  - electric vehicles 11509
  - electrical efficiency 7703
  - electrochemistry 3872
  - electrodes 6725, 7762, 8344
    - gas-transport properties 7762
  - energy
    - conversion 3930
    - end game 8228
  - families 3881
  - for hybridization 3868
  - forklift applications 8228
  - freezing 8223
  - gas diffusion layer 8207
  - Gibbs free energy 8206

- H<sub>2</sub>-air front 8245
- high temperature 6722
- hybrid architecture 3870
- hybrid vehicles (FCHV) 3371, 8239
  - drive train 3390
- industry 6561, 8206
- life cycle assessment (LCA) 3928
- load following 8225
- load-leveled control strategy 3496
- low temperature 6721
- market requirements 7867
- mass flow 3877
- materials 7703
- measurements 8290
- medium-temperature 7867
- methanol-fed 3883
- nanoscale materials 8211
- non-noble metal catalysts (NNMC) 8266
- Ohmic losses 7706
- operating temperature 7732
- platform strategy 8217
- poisoning 7714
- power assist control strategy 3496
- power plants 7879
  - balance of plant (BOP) 7879
- process of designing 8217
- product
  - development process 8219
  - strategy 8217
- proton exchange membrane (PEM) technology 10516
- Pt metal dissolution 7741
- quality function deployment (QFD) process 8217
- reliability 8226
- source of fuels 3862
- stability of alloys 7717
- stack 10500
- start/stops 8224
- sustainability 8228
- system 3385, 3390, 7762, 8207
  - cost 8226
  - efficiency 5141
  - engineering 8219
  - hybridization 3390
  - propulsion battery 7762
- technical readiness 8223
- technologies 3385, 3872
- triple phase boundary 8211
- types 3872
- vehicle (FCV) 3367, 3371, 3385, 3484, 3389, 3495, 3496, 5161, 7695, 8253, 10500, 10515
  - architectures 3385

- hydrogen pathways 10515
- power split strategies 3495
- powertrain configurations 3495
- recent progress 8253
- simulation results 3496
- simulations using
  - ultracapacitors 3495
  - ultracapacitors 3484
- V-flow stack configuration 8240
- voice of the customer (VOC) 8217
- water management 8329
- fuelwood 1289, 1300
- fugacity of oxygen 2939
- Fukushima accident 8389
- full converter turbine 12162
  - steady-state influence 12162
- full facility tolling 5043
- full hybrid electric vehicles 11508
- full-bridge converter 692
- full-power converter system 12151, 12164, 12167
- fumarole 4426, 11617, 11630, 11639
- functional food 10751–10752
- fungal agent 3164–3165
  - from marine sources 3164
- fungal disease 2731
- fungal pathogen 10696
- Fungia* 2493
- fungicide 2567, 2578, 5440
  - protection 2721
  - resistance 2569
- furan 172, 4883–4884, 4992, 8110, 10666
- furnace 1351, 1354, 1355, 1370, 1373, 1377, 1379, 1380, 1383, 1384, 1417, 5255
  - automatically charged 1373
  - drop-down feeding
    - with cup burner 1375
    - with tilting grate 1377
  - for bulk material 1383
  - for herbaceous fuels 1381
  - for whole bales 1384
  - heat storage 1370
  - horizontally fed burners 1380
  - manually charged 1355
  - pellet-fueled 1375
  - small-scale 1351
  - underfed burners 1379
  - wood burning 1355, 1370, 1417
- Fusarium* 1281
- fuse 3001, 3012
- fusion
  - neutrons 8568
  - power plants 7177

- reactor blanket 7179
- techniques 6954
  - grid-based 6954
- fusion–fission hybrid 7178, 7179
- future climate 2099, 2101, 2104, 2109–2111
  - Bayesian methodology 2109, 2110
  - best-guess simulation 2104
  - discrete probability distribution 2111
  - probabilistic statement 2109
- FutureGen project 2159
- fuzzy
  - inference system (FIS) 3116
  - logic 1346

## G

- Gabon reactor 3793
- gain-of-functions strategy 2970
- galactic cosmic radiation/rays (GCR) 8541, 8472, 8560, 8577, 8586, 9477, 9797
- β-galactosidase reporter genes 644
- gallium arsenide (GaAs) 7935
- galvanic cell 740
- Gambierdiscus* 831–832
  - *toxicus* 829
- gambiertoxin 829
- gametocytocide 11086
- gametogenesis 6153
- gamma
  - decay 8564
  - photon 8568, 8570
    - sources 8570
  - radiation 5574, 5584, 5587, 5589, 5608, 5611
    - effects on life span 5589
  - ray 3026, 5561, 5574, 8537, 8552, 8553, 8600
    - dose, albedo approximations 8551
    - MicroSkyshine 8553
    - photon 7207
    - shielding methods 8540
    - Skyshine 8553
    - spectra 7207
    - streaming 8552
    - tracking spectrometers 5572
  - spectrometry 3747
    - analyzing soil and sediment samples 3747
- Gammaproteobacteria* 5055
- garbage 10014
- garden atrium 909
- garden city movement 8857
- gas/gaseous 1590, 3947, 7449–7450, 7453, 7455
  - anhydrous ammonia 3772
  - batteries 3849, 8232

- biofuels 1215
- biomass 1415
  - use of biogas 1415
- burnout 4969
- cap 7801
  - drive 7803
- capture system 5925
- centrifugation 5634, 5636
- chromatography-MS (GC-MS) 1186
- clathrates 6846
- cleaning 1442, 1589, 1590, 1662, 11733
  - residues 11720, 11733
  - strategy 1437
- collection systems 4772, 5741
- compression cables 11180
- conditioning 1442, 1589, 1590
- deepwater exploration 7450
- diffusion 5634–5635, 5637, 5641
  - electrode (GDE) 3874, 8292
  - ideal cascade 5641
  - layer (GDL) 3874, 7697, 7701, 7759
  - media (GDM) 7697, 7699, 7701, 7708, 7758
  - overpotential 7759
- diffusivity 2938
- distributor 11854
- energy carrier 1662
- engine 1460, 1469, 1470, 1528
  - cocurrent gasifier 1469
  - countercurrent gasifier 1469–1470
- entry act 1623
- exchange 597, 600
  - smooth water surfaces 600
- flood 7804
- flow modeling 5302
- flux 11630
- from coal beds 7455
- from tight sandstones 7455
- fuel 5470, 5484, 6838
- generation 1447
- geologic occurrence 7449
- geothermometry 5225
- hydrate 330, 331, 333–335, 337–339, 341, 342, 344, 3845, 6846, 7453
  - Canada 337
  - China 335
  - commercialization 333
  - depressurization 344
  - Eileen trend 338
  - exploration in Alaska 338
  - field programs 335
  - field scale reservoir simulation study 342
  - global distribution 331
  - history 330
  - Hot Ice No.1 well 339
  - India 337
  - inhibitors 344
  - Japan 335
  - material balance study 342
  - Mt. Elbert–01 Hydrate Test well 339
  - New Zealand 338
  - production 333
  - resource potential 334, 338
  - South Korea 335
  - stability modeling for BGF pools 341
  - tarn trend 338
  - thermal methods 344
  - United States 337
- in conventional fields 7449
- insulated transmission 12186
- mobility 7808
- multiplication 5564
- organic (hydrocarbon) air pollutants 11316
- phase oxidation 1352
- pipeline 6419
- plumes 11639
- pollutants 11322
- production 344
- remaining resources 7453
- shales 7455
- solubility 3947, 6724
- starvation 4614
- tar 1463
- transfer 603
- tritium light sources (GTLS) 8525
- turbine 1032, 1461, 2372, 6806, 6808, 6811, 6812, 6814–6817, 6820–6824, 6843, 9936
  - basic thermodynamics 6815
  - Brayton cycle 6816
  - combined cycle (GTCC) power plant 6807
  - combustor 6808
  - cooling 6822
  - development 6812
  - externally heated 1461
  - F-class 6811
  - firing temperature 6817
  - generator 6843
  - history 6812
  - intercooling 6823
  - modular helium reactor (GT-MHR) 4053
  - natural gas burning 6806
  - power plants 6814, 12103
  - recuperation 6823
  - steam cycle 2168
  - voltaic battery 3929
  - wells 4332
- gas-cooled fast reactor system 4053
- gas-expanded liquid (GXL) 3933, 3935–3936, 3947
  - catalytic reactors 3936
  - for sustainable catalysis 3933, 3947
  - thermodynamic and physical properties 3935
- gas-to-liquids (GtL) 1585, 3956
  - technologies 3955
- gas-expanded liquid (GXL) 3934, 4613
- gas-fired boiler 1462
- gas-heated reforming 3965
- gasification 847–848, 867, 872, 878, 1206, 1208, 1214, 1240, 1319, 1322, 1327, 1380, 1416, 1427–1429, 1433–1435, 1439, 1441, 1446, 1448–1450, 1456, 1459, 1528, 1585, 1589–1590, 1611, 2169, 2237–2238, 3967, 3997–3998, 4012, 5126, 5162, 5164, 5236, 5289, 5300, 6465–6466, 8102, 11442–11443, 11833, 11837, 11852–11853
  - agent 1446, 1448, 1450
  - allothermal 1429
  - autothermal 1429
  - biochar system 861
  - biomass pretreatment 1439
  - entrained flow gasifiers 2238
  - FICFB process 1459
  - fluidized bed gasifiers 2237
  - for rural electricity 1446
  - gas conditioning 1441
  - grate-based 6466
  - hydrocarbon reforming 1441
  - moving bed gasifiers 2237
  - of black carbon 11853
  - of straw 1528
  - of waste 5236
  - plasma-assisted 8102
  - power production 1435
  - principles 1428
  - reactions 1449, 1456
  - reactor 1434
    - for syngas generation 1439
  - small-scale 1427
  - synthesis
    - applications 1439
    - reactions 1441
  - thermal-chemical 1433
  - with post-combustion 6465

- gasifier/gasifying 1215, 1430–1431, 1448, 1451, 1528, 1586, 2237
  - waste 1430
- gas-insulated Lines (GIL) 11185
- gas–liquid interface 9129
- gasohol 1007, 11431
- gasoil 2229
- gasoline 299, 302, 307, 1002, 1004, 1224, 1302, 5479, 5483, 11430
  - combustion 3591
  - air pollution 3591
  - engines 5532, 5536
  - boosting 5536
  - gallon equivalent (GGE) 5468
  - hybrid electric vehicles 10520
  - lead 10649
  - plug-in hybrids 8232
- gas-phase
  - mass-transfer control process 6732
  - molecular growth reactions 6995
  - oxidation 1353
  - 3-T-Rule 1353
  - processes 11317
  - in urban environments 11317
- gas–solid dissociation reaction 10561
- gas-to-particle conversion 1336
- gastroallergic anisakiasis 12051
- gastroenteritis 5053–5055, 5064, 9087, 11986
  - *Aeromonas* 5055
  - food poisoning 5064
  - seafood-borne 9087
  - *V. parahaemolyticus* 5053
  - *V. vulnificus* 5054
- gate turnoff thyristor (GTO) 11539
- gateway technology 2589
- Gaussian
  - dispersion theory 261
  - distribution 10977
  - mixture model classifier 11460
  - noise filter 3072
  - probability distribution 10971
  - theorem 3805, 3814
- Gauss–Newton algorithm 10601
- gaze stabilization 58
- gaze-world mapping 3125
- gear ratio design 11486
- gearbox 11486, 12152
- geary corridor 1817
- Geiger–Mueller counter 3023, 5564
- gel battery 5887, 11514
- geldanamycin 506
- gel-type polymer electrolyte 8743
- Gemini program 8233
- gene 2690, 3609, 10398
  - activity 10812
  - cloning 10895
  - cloning 2690
  - construction 10908
  - random integration 10908
  - deletion 2609, 10915
  - discovery 2, 6528
  - encoding 645
  - gene expression 10682, 10868
  - control 10682
  - reprogramming 6173
  - single-copy T-DNA transformants 10682
  - flow 3365, 10724
  - gun method 10797
  - heat-tolerant 10398
  - hypermethylation 3603
  - imprinting 6161
  - inactivation 10913
  - interfering RNAs 10913
  - integration 10900, 10902
  - random integration 10900
  - targeted integration 10902
  - isolation 2690
  - knocking 10889, 10912
  - knockout 10912, 10919
  - animals 7226
  - ontology (GO) initiative 6701
  - polymorphisms 3609
  - revolution 6693
  - silencing 2605, 6530, 10677
  - mutants 10687
  - splicing 4517
  - targeting 645, 2608, 2972, 8061, 10817, 10822, 10831, 10918
  - therapy 10918
  - in humans 10918
  - transcription 7221
  - transfer 2586, 2590, 2748, 2972, 4513, 10672, 10696, 10816, 10869, 10897, 10899–10900, 10916
  - into animals and plants 10897
  - into cells 10899
  - into embryo 10900
  - methods 10899
  - microinjecting 10916
  - to plants 2586
  - transmission 398
  - trapping 10916
  - vectors 10916
- genealogy
  - database 6705
  - management system (GMS) 6699
- general circulation model (GCM) 10162, 11416
- general food law 10773
- general systems theory (GST) 8858
- generation
  - forecast 12185, 12190
  - interconnection 12176
- generation-IV reactors (GEN-IV reactor) 4050
- generator operation 12141
- generic power system 12093
- genesis and rapid intensification process (GRIP) 320
- gene-therapy protocols 10821
- genetic(s) 394, 476–478, 1758
  - aberrations 7222
  - ablation 10914
  - applications 10869
  - control of traits 6428
  - correlation 493, 4085
  - distance 6428
  - distinctiveness 7975
  - drift 1803
  - engineering (GE) 2, 8, 2529, 2536, 2685, 2731, 4013, 4493, 4501, 4510–4511, 4518, 6531, 10695–10696, 10744, 10812, 10821, 10841, 11450
  - conjectural risks 4518
  - European law 4511
  - limitations 8
  - natural mutation 4518
  - of crops for insect resistance 4013
  - techniques 10821
  - evaluation 440, 1776, 1782
  - mixed model equations (MME) 440
  - heterogeneity of residual variation (GHRV) 470
  - improvement 411, 7983, 9390, 10798, 11396
  - rograms 1769, 7983
  - target traits 7983
  - via transgenesis 10798
  - introgression from other populations 477
  - lag 412
  - major genes 476
  - manipulation (GM) 2566
  - maps 6428, 6431
  - marker 400, 411, 462
  - marker-assisted selection 476–477
  - modification 4536–4537, 10770, 10812, 10821, 10865, 10867
  - debate 4537
  - to livestock 10869
  - mutations 10816

- of trait complexes 1769
- pest control 5453
- QTL mapping 478
- resource 1769
  - management 7984
  - support service 6707
- selection 1800, 10396, 10897
  - in horse populations 1800
- transformation 2584
- trends 444
- variability 393
- variance 9382
- genetically engineered food 10760
- genetically engineered (GE) product 10816
- genetically engineered microorganism (GEM) 1631
- genetically modified crop 2755, 4505, 4521, 4532–4534, 10745, 10766–10768, 10772, 10774, 10777–10779, 10785–10789, 10791
  - agronomic characterization 10787
  - approval procedures 10774
  - case-by-case principle 10788
  - coexistence
    - measures 10779
    - policy 10778
  - comparative safety assessment 10786
  - compositional analysis 10787
  - contained use 10772
  - costs 4521
  - decision-making processes 4532
  - deliberate release directives 10772
  - deployment 10788
  - environmental risk assessment 10786
  - food and feed regulation 10774
  - global cropping area 10767
  - GM-free labeling 10777
  - labelling thresholds 10779
  - legal conditions 10767
  - lost benefits of overregulation 4521
  - molecular characterization 10787
  - new management 4533
  - objectification 4534
  - phenotypic characterization 10787
  - regulatory oversight 10768
  - revised deliberate release directive 10772
  - risk
    - assessment 10766
    - assessment concepts 10785
    - communication 10766
    - handling 4505
    - management 10766
  - science-based assessment 10786
  - sustainability assessment 10791
  - tiered approach 10789
  - wicked problems 4533
- genetically modified organism (GMO) 2287–2288, 2290, 2293, 2295, 2298–2299, 2301–2303, 10771, 10775, 10777, 10780–10784, 10791
  - analysis plan 10784
  - assessment endpoints 10783
  - biosafety framework 2288
  - characterization 10782
  - commercialization 2298, 2301, 2303
  - conceptual model 10783
  - environmental pathways 10783
  - global use 2287
  - hazard identification 10782
  - labeling
    - provisions 10777
    - thresholds 10777
  - levels of exposure 10783
  - measurement endpoints 10784
  - problem formulation 10781
  - protection goals 10782
  - regulatory framework 10771, 10791
  - regulatory oversight
    - in Argentina 2288
    - in Canada 2290
    - in China 2293
    - in India 2295
    - in South Africa 2301
    - in the Philippines 2299
    - in the USA 2302
  - risk
    - assessment 10780
    - assessors 10782
    - communication 10780
    - management 10780
  - traceability regulation 10775
  - technologies 2288
- GEN-IV
  - nuclear systems 4052
  - reactors 4050, 7055
- genome/genomic 391, 396, 478–479, 489, 1185, 3275, 3588, 3605, 4518, 6436
  - backcrossing 6436
  - estimated breeding values (GEBV) 2535
  - fingerprinting techniques 8016
  - information 1779, 6701
  - in mammals 479
  - instability 3606, 3608
  - intrinsic integrity 4518
  - misconception 4496, 4503, 4517
  - network 4511
  - pre-selection 492
  - profiling techniques 8016
  - recombination 8137
  - relationship matrix 491
  - revolution 489, 10814
  - sequence/sequencing 1739, 2690, 2714, 10823, 10895
  - selection 387, 399–401, 413, 494, 1779, 1786, 2530, 2535, 4089, 6427, 6435, 6438, 9359, 9390
    - computer support systems 1779
  - technologies 2535
- genome-wide
  - association (GWA) studies 2965
  - marker-assisted selection (GWMAS) 431
  - selection (GWS) 6694
- genotype/genotyping 463–464, 466, 489, 1737, 2686, 4070, 4072, 6711
  - by environment 4080, 4082–4083, 4085–4088
    - additive main effects and multiplicative interaction (AMMI) model 4083
    - bilinear models 4082
    - characterization 4080
    - computer software for GE analyses 4088
    - factorial regression models 4085–4086
    - interaction 463–464, 4070
    - interaction term 4080
    - mixed model framework 4087
    - regression-on-the-mean analysis 4080
    - statistical tools in the interpretation 4082
    - variance-covariance model 4087
  - by locations (GL) 4072
  - by years (GLY) 4072
  - by years (GY) 4072
  - canalization 466
  - database 6705
  - homeostasis 466
  - identification 4072
  - information 4086
  - support service (GSS) 6708
  - value 464
- genotype–environment interaction 411
- genotype–phenotype information 6695
- GenStat 6698
- gentle combustion 11721
- gentrification of the countryside 10363
- geochemical
  - modeling/models 3554, 4094–4099
    - computer programs 4096
    - definition 4095



- reaction path modeling 4098
- speciation–solubility modeling 4097
- coupled reactive mass transport modeling 4099
- reaction network 4096, 4099
- speciation 10053
- geochemistry 3511, 4096, 4098, 5217, 9004
- geodesy in volcano monitoring 11644
- geodetic surveying techniques 11636
- geodimeter 4211
- geoengineering 850, 1924, 2115, 2118, 4104–4107, 4109–4116, 7271, 7278, 9703, 10137, 10163
  - acceptability 4111
  - climate change 4110
  - ethics 4111
  - governance
    - frameworks 4105
    - issues 4104
  - government funding 4112
  - informed consent 4111
  - international frameworks 4116
  - national and minilateral frameworks 4115
  - nonstate frameworks 4114
  - numerical model study 10163
  - policy 4104
  - regulation 4116
  - research
    - projects 4113
    - stages 4109
  - simulation 10163
  - sociopolitical linkages 4109
  - technologies 4107
  - weather modification 4106
- geographic information system (GIS) 1962, 5434, 5824, 6191, 6884, 7034, 8859, 9319, 10622
- geohazard map 5662
- geologic/geological 4095
  - carbon sequestration (GCS) 4123–4124
    - capacity 4123
    - opportunity 4123
    - potential impacts 4124
  - carbon sequestration 2149–2150, 2152, 2154, 2165, 4119
  - CO<sub>2</sub> storage 4122
  - hazards 5661
  - heat source 4192
  - mapping 11634
  - repositories (CCS) 5409
  - reservoirs (CCS) 5412
  - sequestration 4121
    - storage deployment 2157
    - structure map 9004
- geomagnetic activity 9800, 9803
- geomaterial 3234
  - fracturing 3234
  - slippage 3234
- geomembrane 5657, 5752, 10412
- geometric hedged field 10366
- geometrical acoustics 12286
- geometry turbocharger 5536–5537
- geoneutrino 11208, 11209
- geophysical mapping 6413
- geophysics 7799
- geopotential height 12070
- geopressured
  - geothermal systems 4320
  - reservoirs 4246
  - resources 4165, 4181
- geo-reference 3196
- GEOS-Chem model 230
- GEOSECS
  - data 8675
  - project 8663
- geosphere 10356
- geospread wind power 12132
- geostationary
  - earth radiation budget (GERB) sensor 9627
  - ocean color imager (GOCI) 8960
  - satellites 7286, 9620, 9627
- geostatistics 3335, 9753
  - kriging 9753
- geostrophic
  - balance 6592, 12071
  - wind 6592, 6600, 7398, 11266, 11276
- geotextile 4732, 5752
- geothermal
  - binary station 4269, 4270
  - turbine size 4270
  - blowout 4427
  - brines 4247–4248
    - characterization 4248
  - cascading 4376
  - cement 4403, 4404
  - conceptual model 9005
  - conditioning 4133, 4139–4140, 4142, 4150–4152, 4155, 4158
    - annual energy use 4155
    - approaches 4139
    - aquifer thermal energy storage (ATES) 4152
    - aquifer-based systems 4151
    - energy carrier 4140
  - heat pumps 4142
  - infrastructure 4158
  - installed capacity 4155
  - principles 4139
  - rock systems 4142
  - subsurface soil 4142
  - surface water system 4152
  - water-based systems 4150
- development 4335
- drilling 4351, 4381, 4384, 4399–4400, 4407, 4409
  - downhole measurements 4409
  - dual-tube reverse circulation 4400
  - lightweight fluids 4400
  - lost circulation 4399
  - lost-circulation materials (LCM) 4400
  - lost-circulation treatment 4384
  - mud-pulse telemetry 4409
  - solid expandable tubulars 4409
  - wellbore sealing 4400
- electric power plants 4194
- electricity generation 4193
- geothermal 4195, 4206, 4225
  - energy 1477, 4134, 4163–4165, 4167, 4169, 4173, 4176–4177, 4179, 4190–4191, 4196–4199, 4222, 4226, 4240, 4330–4332, 4350, 4354, 4359, 4361, 4363, 4375, 4377, 4381, 4416, 4418, 4422, 4429, 9001, 11210, 11649
    - accessibility 4197
    - agribusiness applications 4361
    - agricultural drying 4363
    - bonds 4429
    - conversion systems 4295
    - definition 4163, 4191
    - direct utilization 4173
    - district heating 4359
    - drilling 4381
    - economic considerations 4375
    - environmental considerations 4176
    - environmental footprint 4191
    - environmental impacts 4416
    - excessive production 4222
    - expectations 4190
    - extraction 4128
    - flux 11208
    - for electric power production 4164
    - future 4330
    - geology 4179
    - global resource assessments 4198
    - ground temperature changes 4418
    - hydrology 4179
    - industrial applications 4363
    - magma body 4332

- nature 4190
- renewability 4226
- reserves 4331
- resources 4165
- savings 4177, 4377
- space heating 4359
- sustainability 4226
- sustainable production 4222
- technologies 4196
- use 4190
- utilization 4162, 4167, 4199, 4354
- waste liquid disposal 4422
- worldwide installed capacity 4354
- environment 4415
- field 4204–4205, 4210, 4215, 4216, 4217, 4226–4227, 4229, 4231, 4292, 4352, 4415, 4423, 4426, 9000, 9002, 9012, 9018, 9020, 9021, 9023, 11619
  - casing integrity 4205
  - changes in fluid pressure 4204
  - changes in fluid temperature 4204
  - electrical resistivity 4215
  - fluid flow rates 4210
  - fluid mass 4205
  - forecast simulation 9020
  - ground surface movements 4210
  - heat flow studies 4229
  - hydrothermal eruptions 4426
  - induced seismicity 4215
  - liquid-dominated 4226
  - lumped-parameter model 4229
  - micro-earthquakes 4216
  - geothermal field monitoring 4201
  - natural thermal features 4415
  - numerical simulation 4229
  - piping system 4292
  - reservoir engineering 9000, 9002
  - reservoir simulation 9021, 9023
  - sodium fluorescein 9012
  - surface monitoring 4210
  - sustainability 4352
  - sustainable capacity 4227, 4231
  - thermal features 4217
  - volumetric flow rate 4205
  - wellbore simulator 9021
- fluid 4197, 4206, 4207, 4245–4248, 4253, 4267, 4273, 4302, 4362, 4416–4417, 4426, 9003
  - calcium carbonate ( $\text{CaCO}_3$ ) 4207
  - carbon dioxide 4426
  - chemistry 4246
  - dissolved solids 4248
  - flashing process 4273
  - heat content 9003
  - mass withdrawal 4416
  - production 4247
  - pumps 4288
  - reinjection temperature 4253
  - separation processes 4273
- heat pumps (GHP) 4140, 4151, 4173, 4178, 4193, 4199, 4331, 4354, 4373, 4378
  - coefficient of performance (COP) 4373
  - energy efficiency ratio (EER) 4373
- monitoring 4203–4204
  - basic principles 4203
  - down-hole techniques 4204
  - interpretation of the results 4204
  - program planning 4203
  - purposes 4203
- plants 4427–4428
  - footprint 4428
  - good engineering practices 4428
  - good management practices 4428
  - land use 4427
  - visual impacts 4427
- power 4245, 4340–4342, 4345–4346, 4348–4349
  - capacity 4221, 4222, 4340
  - capital cost 4342
  - capital expenditure 4345
  - conversion technology 4234, 4239
  - cost calculations 4340
  - definition 4340
  - economics 4340
  - economy of scale 4341
  - expansion 4334
  - generation 4184
  - history of operation 4346
  - industry 4223
  - industry system 4279
  - leveled cost 4245, 4342, 4349
  - plant 4193, 4353, 4376
  - plant capacity 4348
  - production 4159, 4182
  - well productivity 4341–4342
- power station 4243, 4249, 4251, 4254, 4285–4286, 4288, 4295, 4297, 4300–4302, 4304–4305, 4310, 4315, 4317, 4321, 4327–4328, 4330, 4332, 4350, 4426
  - air-cooled condensers 4285
  - binary station 4315
  - combined cycle 4310
  - cooling tower 4286
  - cost estimates for installed kilowatt (kW) 4243
  - cost estimates for megawatt-hour (MWh) 4243
- Costs 4243
- $\text{CO}_2$  emission 4426
- dry-steam reservoir 4254
- dry-steam power station 4297
- energy conversion process 4251
- experimental 4315
- first and second law of thermodynamics 4251
- flash-crystallizer/reactor-clarifier (FCRC) systems 4300
- geopressured systems 4332
- helical screw expander 4330
- hybrid 4321
- material selection 4249
- metallic materials 4249
- optimization 4295
- organic Rankine cycle configurations 4302
- pH modification (pH-Mod) systems 4301
- pumps 4288
- rotary separator turbine 4330
- steam Rankine cycle 4254
- supercritical cycle 4317
- sustainability 4295
- total-flow systems 4328
- trilateral flash cycle (TFC) 4327
- two-phase 4304
- two-phase heat source 4305
- using hyper saline brines 4300
- project 4241, 4244
  - aggregate risk 4241
  - comparison with other technologies 4244
  - design 4241
  - implementation 4241
- recooling 9534
- reserves 4195
- reservoir 4212, 4223, 4233, 9002–9003, 9005–9007, 9010, 9014, 9016, 9021, 9022
  - capillary tubing system 9010
  - discharge characteristics 9006
  - evaluation 9002, 9022
  - fluid enthalpy 9014
  - groundwater 4212
  - injectivity index 9006
  - interference among wells 9010
  - lip pressure method 9007
  - mass production and reinjection 9014
  - monitoring 4201
  - natural-state simulation 9016
  - numerical model 9016

- numerical simulation 9014
- permeability 9006
- permeable zone 9005
- power capacity 4233
- pressure 9003, 9014
- sensitivity study 9021
- simulation model 4228
- temperature 9003, 9014
- wellbore simulation 9010
- resource 3502, 4165, 4170, 4183, 4188, 4194, 4197, 4214, 4240, 4245, 4350, 4351, 4353, 4376, 4380, 4414, 4428–4429, 5217
  - characteristics 4245
  - direct heat utilization 4353
  - direct utilization 4170
  - distribution 4351
  - drilling 4380
  - economic measures 4429
  - energy conversion systems 4240
  - environmental aspects 4414
  - ground movements 4429
  - injection 4428
  - microgravity 4214
  - non-power producing applications 4188
  - plant design 4429
  - regulations 4429
- rock formations 4384
- steam 4322
  - turbine 4250
- supplies 4194
- system 4153, 4187, 4192, 4203, 4364, 4418
  - conduction-dominated systems 4192
  - convection-dominated systems 4192
  - depletion of groundwater 4418
  - design 4138
  - direct-use temperature requirements 4364
  - for electrical power generation 4203
  - ground deformation 4418
  - hot sedimentary aquifer systems 4192
  - hybrid systems 4192
  - permeability 4187
  - water-based 4153
- transmission lines 4369
- waste water 4424
- water 4357, 4362, 4365–4367, 4415
  - balneology 4357
  - bathing 4357
  - cultural uses 4415
  - drops 4252
  - swimming 4357
  - temperature 4367
- well 4192, 4206, 4351, 4368, 4385, 4387, 4389, 4427, 5220, 5226
  - casing program 4389
  - corrosion 4206
  - cost 4385
  - designing 4387
  - downhole pumps 4368
  - landslides 4427
  - lineshaft pumps 4368
  - planning 4387
  - wellbore geometry 4389
- geothermic
  - plant 11596
  - waste 11606
    - vitrification 11606
- geothermometry 5219, 5220
- germ cell 3628, 10900
  - environmental damage 3628
  - mutagenicity 4849
  - purification 646
- German energy scenario 4770
- germinal vesicle (GV) 6164
- germinate 6701
- germination 9146
- germplasm 10395
  - heat-tolerant 10395
- gestation 3629
- geyser 4217, 4358
- giant kidney worm 12031
- giant pumices 11622
- Giardia* 12048–12049
- Giardiinae* 12048
- gibberellin (GA) plant hormones 2693
- Gibbs
  - free energy 117, 743, 745, 3873, 3879, 3927, 5139, 5156
    - of solvation 3424
  - oscillations 12068
  - sampling 468
- Gibbs–Donnan effect 2904
- Gibbs–Thomson effect 7762
- Gibbsite 8606
- gill site interaction model (GSIM) 10052
- gill-type atmosphere 7376
- glacier/glacial 281, 286–288, 292, 2061, 2065, 2069, 2455, 2458, 2460, 2513, 2762, 2766, 2768, 2769, 2771, 2776
  - airborne radar ice sounding 292
  - dynamics 2767
  - governing equations 2767
  - geometry 2768
  - glacier ice 2769
    - basal flow 2769
  - glaciological data 2771
  - InSAR Measurements 287
  - isostatic adjustment (GIA) 2456, 4570, 4575, 4579
  - mass loss 288
  - melting 2458, 2460
  - modeling 2769
  - regional image mapping 286
  - soil 2432
  - surface elevation 288
  - velocity 288
- glaciology 283
- glare control 3688
- glare filter 2837
- Glaser coupling 10175
- GLASOD database 1555
- glass 8801, 11605, 11607
  - ceramics 11601–11602, 11604–11606
    - matrix composites 11606
    - open-celled 11605
    - by direct sintering 11604
    - by nucleation 11601
    - by sinter-crystallization 11602
    - by the peturgic method 11604
    - ferromagnetic behavior 11602
    - fibers 11604
  - cullet 11584, 11598, 11607
  - fibers 11604
  - foams 11604
  - network 11582
  - powders 11602
  - recycling 8779, 8801, 9991
    - plants 8839
  - waste-derived 11605, 11607
  - windows 2808
- glasshouse
  - studies 10393
  - trials 10718
- Gleasonian succession 3290
- Glen's flow law 2768, 2770
- gliadin 4555
- global
  - aerosol population 112
  - agriculture 10743
  - air pollution 11314
  - aquaculture alliance (GAA) 9183
  - atmospheric models 8905
  - biodiversity 10092
  - carbon cycle 3707

- change assessment model (GCAM) 5403, 5406, 5409–5410
  - agriculture 5409
  - agriculture-land-use component (AgLU) 5410
  - architecture 5406
  - bioenergy 5410
  - energy system 5406
  - land use 5409–5410
  - partial equilibrium framework 5406
- chemical transport model 230
- circulation model (GCM) 2119, 6597, 9804
  - mesoscale models 6597
  - microscale model 6597
- climate 8903
- climate change 7245, 8659, 9686, 11930
  - general circulation models 9686
- climate forecast 2131
- global
  - climate model/modeling (GCMs) 2761, 3213, 6743, 6755, 8903
    - biosphere-atmosphere transfer scheme (BATS) 3213
    - bucket model 3213
    - downscaling modeling 6755
    - Simple Biosphere Model (SiB) 3213
    - simulations 3291
  - climate simulations 8908, 8916
  - climate system 6741
  - demand for energy 9905
  - dimming 141, 9731, 9733
  - earth observation system of systems (GEOSS) 8921
  - emission
    - inventory 663
    - model for integrated systems (GEMIS) 4761
  - energy 2186
    - challenge 9905
    - global energy and water-cycle experiment (GEWEX) 9623
    - supply 2191
  - environmental change 6190
  - fallout radionuclides 8862, 8663, 8665, 8675
    - deposition density 8675
    - GEOSECS project 8663
    - monitoring 8663
    - Pacific Ocean 8665
  - fishing crisis 3556
  - food
    - production 1742
  - security 1745, 2687, 6427
  - supply 7386
  - freshwater 7685
    - resources 2345, 8689
  - genetic resource management 7975, 7982
  - greenhouse gas emissions 10505
  - horizontal irradiance (GHI) 9674, 9691, 9745
    - estimating diffuse hemispherical radiation 9691
    - estimating direct beam (DNI) 9691
  - hydrate resource 333
  - hydrological cycle 8013
  - Interagency IPY Polar Snapshot Year (GIIPSY) 292
  - irradiance 9628
  - land use 5788
  - laser enrichment (GLE) 5643
  - malaria program (GMP) 12001
  - mean air surface temperature (GMAST) 9799
  - mean temperatures 2143
  - meteoric water line (GMWL) 5228
  - momentum equations 12210
  - nuclear energy partnership (GNEP) 4060
  - nuclear weapons testing 8491
  - ocean circulation 8661, 8669, 8672
  - ocean hydrography 7287
  - ocean networks 7287
    - drifters 7287
    - floats 7287
    - gliders 7287
    - moorings 7287
    - seafloor cables 7287
  - ocean observations 5873
  - ocean observing network 7282
  - ocean ship-based hydrographic investigations program (GO-SHIP) 5875
  - polio
    - eradication initiative 8149
    - laboratory network (GPLN) 8151
  - population 1507, 1553, 1742
  - positioning system (GPS) 74, 1852, 4565–4567, 6962, 12080
    - occultation 4565
    - receivers 4566
  - spectral irradiance 9716
  - system for mobile communication (GSM) 74
  - temperature 2105
    - change potential 654
  - thermohaline circulation 8658–8659, 8662
  - tilted irradiance (GTI) 9755
  - toxification 6188
  - transport energy 9335
  - urbanization 10358
  - warming factors (GWF) 4760, 4763
  - warming 1, 112, 141, 144, 162, 348, 548, 850, 2062, 2080, 2455, 3233, 3451, 3707, 3845, 4104, 4738, 7844, 8690, 8775, 9741, 10161, 10391, 10441, 10483, 10486
    - costs 10486
    - gas 10296
    - impacts on water resources 2080
    - potential (GWP) 654, 1307, 858, 1501, 5415, 5911, 7272
    - sunshade 10161
  - water 2061, 2070
    - balance 7251
    - cycle 3222, 9736
    - resources management 2061
    - sustainability 2061, 2062, 2064, 2070
    - weather 2081
- globalization 4533
- globally harmonized system of classification and labeling of chemicals 4848
- glucanase 10845
  - genes 10697
- glucan 991, 999
- glucoamylase 992
- glucose 1278, 11020
- glucosidase 8048
- glucosinolate 1192
- glucosuria 11240
- β-glucuronidase (GUS) 2598
- glucuronidation 3643, 12303
- glucuronide estrogen 11967
- glufosinate 4472, 10352
- glutamic acid 550
- glutathione 4666, 12305
  - peroxidase 3662
  - selenium-dependent 3662
  - S-transferases (GSTs) 3643
- glycan modifications 8063
- glycerine 1045, 1219
- glycerol 362, 926, 929, 3935, 6913, 11447
- glycerolysis 6904
- glycomacropeptide 10855
- glycopeptide antibiotics 504
- glycophytes 5318
- glycoprotein 4828, 8068, 8074
  - plant-produced 8068
- glycosylation 8068
  - N-glycosylation 8063
  - O-glycosylation 8064
- glycosylphosphatidyl-inositol (GPI) 4017

- glyphosate 2598, 4435, 4444, 4472, 4530, 10348, 10352, 10716, 10723
  - resistance 4530
- Gnathostoma* 12037
- goat 1765
  - breeding 1763
  - genetic resource management 1765
  - meat (chevron) production 1752
- Goddard Earth Observing System chemical transport model (GEOS-chem) 196
- goethite 8606, 8610, 8622–8623
- Goiânia accident 3538–3539, 8528
  - mechanical decontamination 3539
  - remediation actions 3539
- gold
  - catalysts 7585
  - mine tailings 6674
  - surface 1647, 1648
- gold-binding peptide (GBP) 1648
- golden Rice project 4525
- Goldschmidt factor 2940
- gonadotropin 10819, 10891
- gonocyte 5577
- good agricultural practice 1133
- Google Earth 3171
- Google StreetView 3171
- Gorgoderioidea* 12027
- gossypol 4039, 4509
- GRACE 4568–4569
  - data 4569, 4571, 4573, 4575, 4577–4579
    - analysis 4568
    - accuracy 4571
    - cryospheric studies 4575
    - earthquakes 4579
    - ocean information 4569
    - ocean studies 4577
    - solid earth studies 4579
  - satellite 285, 3232, 4567
    - accelerometers 4567
    - microwave K-band ranging instrument 4567
    - orbit-control thrusters 4567
    - pair 4564
    - ultra-stable oscillator 4567
  - science data system 4569
- gradient wind 7398
- grain 4551, 4553, 4555, 4558, 4560, 9149
  - components 4555
  - crops 2673
  - dormancy 9149
  - germination 9149
  - growth 4553, 4555
  - hardness 4560
  - production 1743
  - quality 4550–4551, 4557–4559, 6203
    - concept and importance 4551
    - environmental effects 4558
    - genotypic effects 4557
    - impact of lodging 6203
    - management strategies 4559
  - segregation 10724
  - source–sink balance 4553
  - structure 4551, 4553
  - weight 4558
  - yield 6203, 8018
    - impact of lodging 6203
    - production 10040
- graminaceous plant 1712
- Graminae* 1279
- gram-positive organism 5064
  - treatment 5064
- granular activated carbon (GAC) 10148
- granular media filter 2910
- graphene nanosheet 6779
- graphite 752, 6133
  - bipolar plates 8252
  - intercalation compound (GIC) 710, 6140
    - staging phenomenon 6140
  - interface 6058
  - lithium anode 707
  - nitrogen atoms 8275
- grass roof 4701
- grass weed 10348
- grassland 3315
- grate
  - combustion 4960–4961, 11836
  - furnaces 1322, 1324
  - siftings/riddlings 4970
- gravel siltation 3755
- gravimeters 4570
- gravimetric energy 741
- gravimetric power density 8237
- gravitational acceleration 3055
- gravitational driving stress 2770
- gravity 4214, 4565, 4570, 4580, 7799
  - changes 4580
  - data 4570
  - drive 7803
  - measurement 4565
  - field 4564, 4569
    - mascons 4569
    - of earth 3232
  - recovery and climate experiment (GRACE) 4563
  - waves 12066, 12068
- grazing food chain 824
- great ocean conveyor belt 5859, 8661
- greedy perimeter coordinator routing (GPCR) 11566
- greedy routing model 11569
- green aerated concrete 3831
- green algae 353, 356, 360, 362, 365, 553, 927, 2543
  - hydrogenases 362
- green architecture 4691, 4703, 10933
- green belt 5806
  - policies 11350
- green biotechnology 4492, 4504, 10749
- green brick 3833
- green building 5332, 5334, 5336, 5341, 6891, 8705, 8711, 8861, 10192, 10194, 10302
  - acoustics 5336
  - assessment systems 9031
  - noise control 5336
  - sustainable design principles 5341
- green business sites 956
- green catalyst 7584, 7592, 7598
  - E-factor 7592
- green catalytic transformation 4584
- green certificate 8380
- green chemistry 4585, 4614–4616, 4619–4620, 4634, 4642–4643, 4847, 4855, 6790, 6796, 7584, 7586, 7589, 7610, 10169, 10658
  - 12 principles 4620, 4643
  - catalysis 7586
  - hazardous materials assessment methods 4855
  - metrics 4586, 4616
  - oxidation catalysts 4615, 7584
  - principles 7589
  - with microwave energy 4642
  - zebrafish model 6796
- green city 958
- green design guidelines 5343
- green diesel 5473, 5488–5489
- green electricity 4481, 4485
- green energy 1287
- green engineering 4847, 4855, 7586, 7611, 7612
  - hazardous materials assessment methods 4855
- green envelope 4709
- green facade 4748
- green fluorescent protein (GFP) 640, 2600, 8063
  - encoding gene 10677
- green infrastructure 4673–4674, 4678, 4683, 4691, 4693, 10359–10360, 11347
  - climate change 4673
  - vulnerability 4691
- green metrics 4615, 4618–4619, 4637
  - algorithms 4619
  - calculations 4619
  - definition 4618

- green nanoscience 6790, 6792, 6796
- green oxidation catalyst 7884, 7585, 7605, 7612
- green power 12242, 12265
  - markets 12216, 12254, 12264
- green procurement 11676
- green revolution 152, 562, 2529, 2541, 2550, 2634, 2692, 2741, 2748, 4073, 10345, 10744
- green roof 3462, 4698, 4701–4706, 4716, 4708, 4710–4711, 4714, 4717–4719, 4721, 4723, 4725, 4727, 4728, 4730–4732, 4735, 4742–4746, 4748–4750, 6876, 10359, 10356
  - as ecosystems 4732
  - audit 4725
  - benefits to urban areas 4714, 4717
  - biodiversity 4721, 4738, 4748
  - building code 4727
  - cooling effect 4746, 4750
  - ecological functions 4730
  - ecological synergy 4750
  - energy performance 4744
  - energy savings 4719
  - evaporative cooling
    - capacity 4742
    - consumption 4738
  - evaporation of water 4746
  - extensive 4717
  - flash floods 4719
  - growing media 4710, 4731
  - infrastructures 4697
  - in Germany 4703
  - in urban areas 4716
  - incentive programs 4704
  - intensive 4717
  - London audit 4723
  - longevity 4708, 4731
  - lysimeter 4742
  - modern technology 4704
  - photovoltaic solar panels 4719
  - planting techniques 4711
  - policy
    - in European countries 4705
    - programs 4710
  - pollution removal 4719, 4721
  - quantifying 4727
  - rainwater management 4735, 4743
  - reduced air conditioning requirements 4745
  - reducing energy requirements 4737
  - retrofitting 4725
  - role in Urban Planning 4721
  - Sedum 4749
  - simple intensive 4701
  - stormwater runoff 4719, 4735
  - surface temperatures 4745
  - technology 4721, 4731
  - thermal insulation 4735, 4738
  - thermal lag effect 4737
  - thermal performance 4744
  - toolkit 4723
  - urban heat island effect 4718
  - urban planning tool 4728
  - water management 4739
  - weed control 4739
  - wildlife potential 4727
  - worldwide historic roots 4702
  - worldwide distribution 4706
- green school 5342
- green screen 4862
  - for safer chemicals 4860
- green sea turtle 3568
- green solvent 7601, 10183
- green space 11356
  - plan 4728
- green sustainable building 9028
- green synthesis 7606
  - for bisnoralddehyde (BNA) 7606
- green technology 4743, 10341
- green tide 553
- green urbanism 10933
- green wall 3687, 3689, 4723, 4733
  - energy saving 3689
- green waste 5244
- green water 1544
- green wedge 952
- greenhouse 911, 4365
  - distillery 9759
  - effect 131, 348, 634, 1200, 2499, 2757, 7844, 9766
  - heating 4365
  - trapping 9809
  - warming 9647, 9734
  - whitefly 5435
- greenhouse gas 144, 162, 177, 204, 245, 299, 613, 632, 653, 769, 851, 921, 1057, 1134, 1261, 1308, 1533, 1552, 1602, 1784, 1909, 8775, 8898, 9742, 10586, 11694
  - balances 1261, 1533, 1535
  - emissions 1134, 1308, 1504, 1533, 1535, 1575, 2068, 3224, 4675, 4754, 4765, 4769, 5462, 9441, 10296, 11665, 11668, 11692
    - by landfilling 4765
    - by waste incineration 4769
    - from solid waste management 11665
  - impacts 1552
  - mitigation strategy 11694
  - reduction 10586
- greening program 11351
- Greenland ice sheet 10165
- Greenpeace 4526–4527
- Green's function 11636
- greenshell mussel 6764
- greenwash 562
- grey infrastructure 4678
- grid 10944
  - development 10936
  - history 10936
  - splitting 10944
- grid-enabled vehicles (GEVs) 9334, 9337
  - Policy Drivers 9337
- Griffithsin 3164
- Grignard reaction 4623
- gross calorific value (GCV) 1234, 1303, 1315, 9833
- gross collector efficiency 9543
- gross domestic product (GDP) 1765
- Grotthus
  - motion 743
  - shuttling 8209
- Grotthus–Draper law 11377
- ground 3235, 3237, 3239, 3249–3250
  - acceleration 3235
  - breaks 3239
  - deformation 3239
  - deformations 3237, 3249
  - heat flux 3217
  - motion 2425, 3233, 3234
  - shaking 3250
  - source heat pumps (GSHP) 4191, 4193, 4351
  - stores 10556
  - surface 3185
    - elevation 5712
    - segmentation 3185
  - temperature distribution 4134
- grounding 3003
- ground-level ozone 176, 245
- ground-reflected radiation 10626
- ground-source heat pumps 4356
- groundwater 1545, 1635, 1638, 2327, 2336, 2433, 3221, 3455, 3595, 4126–4127, 4212–4213, 4424, 4687, 4775, 4777, 4784, 4786, 4806–4813, 4815–4816, 5646, 5648, 5654, 7669, 7685–7686, 7812, 10142, 10146, 10149–10150, 10153, 10190, 10409–10410, 10414, 10436, 10445, 10970, 11001, 11944
  - aquifers 4127, 4212, 5648
  - behavior 4815
  - chlorinated aliphatic compounds 10445
  - chlorinated aliphatic hydrocarbons 10153
  - chromium-contaminated 10410

- climate framework 4812
  - concentrations 10436
  - contamination 1638, 4424, 4775, 4786, 4794, 5654, 7685, 7812, 10142, 10970
  - ex situ approaches 1635
  - extraction 4806, 4812
  - flow system theory 4816
  - flow systems 4808–4809
  - functioning 4807
  - geochemical changes 4126
  - geological framework 4811
  - heat production 11944
  - impacts of radioactive wastes 4775
  - importance for urban development 4809
  - in situ remediation approaches 1638
  - management 5827
    - policies 4807
  - microbial and nutrient transport 7685
  - microbial pollutants 7686
  - movement 5646
  - multiphase extraction 10149
  - nitrate 3781
  - pathogen-contaminated 7669
  - piezometric surface 4213
  - pollution 4687
  - potable 4127
  - pumping 10146, 10150, 11943
  - quality response 4810
  - quality 4126, 4807, 4816
  - recharge 6626
    - program 2083
  - redox conditions 4777
  - remediation 3595, 4784, 4790, 4804, 10407
    - benefits 4804
    - economic analysis 4790
    - using permeable reactive barriers (PRBs) 10407
  - removal of metals 10409
  - reservoirs 4418
  - resources 2324
  - salinity 4804
    - due to urban growth 4804
  - storage 3221
    - capacity 4809
  - tritiated water 11001
  - uranium removal 10414
  - vertical flow control 4813
  - vulnerability to contamination 4808
- groundwater–surface water interactions 7686–7687
- group on earth observations (GEO) 8921
- GROWSCREEN 10
- growth
  - chamber studies 10393
  - differentiation factor (GDF) 10890
  - hormone (GH) genes 10798
  - respiration 3224
- guanosine triphosphate (GTP) 1710
- guaranty ecological flow 2795
- guided rapid transit 1816
- guiding reflector posts 3076
- Guinea worm 12013
- Gurley value 8733
- guttation fluid production 8046
- Gymnophallidae* 12028
- gypsiferous mine water 6658
- gypsum 2408, 6653, 6658, 8360, 11712
  - closed-loop recycling 2408
- Gyrodactylus salaris* 1940
- gyrometer 3060, 11196
- H**
- Haar features 83, 86
- Haar-wavelet filters 6968
- Haber–Bosch process 850, 2662, 2741
- habitat 951
  - availability in cities 951
  - birds directive 9181
  - destruction 6180
  - for biodiversity 11354
  - loss 1542
  - management 156
  - quality 3332
  - suitability models 1962
- Hadley cell 7251, 8968
- Hadley Center Atmosphere Model (HadAM3) 3291
- Hadley circulation 6745, 9637–9639
- Hagberg falling number [HFN] 6203
- Hahn-echo pulse 6083
- Haldane mapping function 479
- Haldor Topsøe's Integrated Gasoline Synthesis (TIGAS) process 3988
- half-bridge converter 692
- halichondrin B 3158
- Hall effect 42, 700
- haloacetic acid (HAA) 10537
- halocarbon 8885, 9741
  - source gases 10135
- Haloclean pyrolysis 1528
- Haloclean-gas tight rotary kiln 1525
- halogen 8583
- halophyte 5318, 6313–6314
- halothane gene mutation 476
- Hamiltonian term 6081
- handmade cloning (HMC) 6154
- haplotype 487, 6431, 6435
  - diversity 6431
  - profiling 6435
- harbor 11298
- hard carbon 6140
- Hardy–Weinberg proportion 7980
- harmful algal bloom (HAB) 1953, 2259, 2260, 2264, 2265, 4819, 4820, 6180, 6762, 7332, 7388, 7389, 7671, 8926, 9117
  - research plan 2260
  - total cost 7389
  - warning systems 2265
- harmful parasite 12054
- harmonic voltage 12139
- harmony of water 10189
- harvest 1130–1131, 1484
  - index 1484, 2639–2640, 2652, 2676, 2736, 8019
  - simulation model 3331
  - storage 1130–1131
  - transport 1130
- Harvie–Møller–Weare (HMW) formulation 4097
- hatchery
  - fish 6391, 6394, 6398
  - reform project 6399
- Haun stage 2542
- H-axis 25
- hazard ranking system (HRS) 2009
- hazardous
  - air pollutant (HAP) 170, 172, 298, 2209, 5480, 8350, 11306
    - emissions 4883
    - hydrocarbon-based 5480
  - compounds 6976
    - thermal destruction 6976
  - incinerator emission 4891
    - scientific publications 4891
  - material 4846–4848, 4856, 4862, 4904
    - assessment frameworks 4862
    - assessment 4846, 4856
    - characterization 4846, 4848
    - flammable substances 4848
    - governance 4847
    - management 4847–4848
    - misuse 4847
    - oxidizing substances 4848
    - pyrophoric substance 4848
    - vitrification 4904
  - organic substances 4871, 10581
    - life cycle release 4871
  - solid residues 4866



- hazardous waste (HW) 4881, 4903–4904, 5244, 5256, 9980, 10018, 11583, 11589, 11592, 11598, 11830
  - ashes 4904
  - dioxins 4904
  - disposal 5733
  - gaseous emissions 4904
  - incineration ashes 4866, 4869, 4874, 4903
    - application in or as building and geotechnical materials 4869
    - before utilization 4869
    - treatment 4869
    - uses as adsorbent 4874
    - utilization 4869
  - incinerator 4880–4882, 4898
    - best available technologies (BAT) 4881
    - biokinetics 4898
    - biological monitoring 4898
    - dioxin emissions 4898
    - emissions 4880
    - heavy metals emissions 4882
  - non-incineration methods 4903
  - potential contents 4903
  - variances 4903
  - landfill 5753, 5762
  - sites 10441
    - risk assessment process 10441
- hazardous and solid waste amendment 10017
- haze factor 9274
- H-coal 2230
- heading date 2697
- headway-based control 106
- health/healthy
  - buildings 5332, 5333
    - indoor environmental quality (IEQ) 5333
  - built environment 10260
  - indoor air 10271
  - effects of air pollution 174
  - hazards 4862, 9091, 9167
    - seafood-associated 9091
    - sentinels for early warning 9167
  - physics 4905–4906
    - definition 4905
    - development 4906
    - history 4906
- healthcare facility 5339
  - evidence-based design 5339
- heap leach dump 6677–6678
  - detoxification 6678
- hearing aid battery 6513
- hearing loss 6513
- heart failure devices 6507
- hearth 1305
- heat 1199
  - buffer storage 1370
  - conduction equation 5686
  - convectors 4375
  - diffusivity 10553
  - energy 3502, 4770
    - substitution 4770
  - engines 3848, 5142
    - for electricity production 5142
  - exchange reforming 3965
  - exchanger 4264, 4371, 10568
    - evaporator 4264
    - preheater 4264
  - extraction equipment 4172
  - flux 4746
  - from biomass 1199
  - island effect 10359
  - mix factors 4764
  - of combustion 5245
  - of fusion 10557
  - of melting 10557
  - production 1611
    - gasifiers 1611
  - pump efficiency 4141
    - seasonal performance factor (SPF) 4141
  - pumps 4193, 4334, 4373
    - performance (COP) 4193
    - system design 4142
  - radiation 1361
  - recovery steam generator (HRSG) 2168, 2367, 2371, 6828
  - rejection system 2814, 9539
  - sources 4184
  - storage 1372, 2370, 4134, 10552
  - stress 10400
  - supply 1372
    - combined systems 1372
  - tolerance during reproductive development 10399
  - transfer 4140, 4364, 5519, 10555, 10557, 10561
  - transfer effect 5509
  - transfer fluid (HTF) 2364, 2366, 2368, 2369, 7628, 9452, 9453, 10564, 10568, 10576
    - air 2369
    - parabolic trough collectors 7628
    - salt 2368
    - sodium 2369
    - water/steam 2369
  - transfer rate 2900
    - composites 10561
    - concepts 10561
  - transmission 2850
    - coefficient 2850
- heater 1362
- heating
  - boilers 1365
  - of domestic water 9450
  - oil burner 1377
  - place 1361
  - value 1234, 9832
- heating, ventilating, and air-conditioning (HVAC) 10246, 10333, 10552
  - environmental footprint 10333
- heat-island effect 4678–4679
- heat-resistant
  - cowpea cultivars 10396
  - rice cultivars 10397
  - wheat cultivars 10398
- heat-shock protein 5, 10399
- heavy metal 3629–3630, 3783, 4887, 9089, 10409, 10418, 10423, 11306, 11308
  - combined chemical and phytoremediation 10418
  - contamination 10409
  - electrochemical removal 10423
  - exposure 3630
  - in seafood 9089
  - in the urban atmosphere 11306
  - precipitation 10409
  - trace elements 11306
  - urban areas 11306
- heavy oil 7809, 7819
  - production 7817
    - horizontal wells 7817
    - inert gas injection (IGI) 7817
  - upgrading 7819
- heavy rail 1812
- heavy-duty vehicle 3069
- Heck coupling reaction 10175
  - of phenyl iodide 10175
- Heisenberg uncertainty principle 3801
- Helgeson–Kirkham–Flowers (HKF) equation 4096
- heliostat 2353–2354, 2356–2365, 2373, 2387, 2388, 6034, 6036, 9590
  - aiming strategies 2361
  - air Receiver 2365
  - blocking 2358
  - canted-glass mirror 2353
  - cavity receiver 2364
  - components 2353
  - direct absorption receiver 2363

- field 2352, 2360–2361, 2373, 2383, 6031, 9614
  - design 2356
  - investment costs 2383
  - overall efficiency 2360
  - receiver types 2361
- flat-type single mirror heliostats 2354
- ideal shape 6034
- manufacturability 2388
- non-focused 2354
- one-dimensional aiming 2361, 2362
- optical loss 2360
- radiant power 2357
- shadowing 2358
- shapes 2353
- single aim point 2361
- size 2354, 2387
- small-mirror systems 2356
- spillage. 2359
- stretched-membrane focused 2354
- sub-mirror 2353
- theoretical consideration 2357
- tube receiver 2364
- two-dimensional aiming 2361
- types 2353
- user-defined aiming strategy 2363
- Heliothis* pest 4467
- heliotron 7163
- Helmholtz-Smoluchowski law 10421
- Helminthosporium turcicum* 1277
- helminths 11877, 11879, 12021, 12054
- hematite 8623, 11602
- hematopoietic stem cell (HSC) 10826
- hemicellulase 973
- hemicellulose 964, 974, 1075–1076, 1519, 6020, 9824–9825, 11436–11437
  - sugar 970
- hemikryptophyte 1139
- Hemiptera* 4026
- hemispherical camera 7924
- hemispherical radiation 9690–9692
  - on a tilt 9691
- hemolytic-uremic syndrome 5063
- Henry's law 2027–2028, 9053
  - constants 6722, 6726, 10143, 10958, 10959
- hepatitis 10645, 11988, 11991
  - A 11988
    - cell culture propagation 11988
    - genogroups 11988
    - infections 11988
  - B (HBV) 5000
  - E 11991, 11992
    - transmission 11992
  - epidemiology 11991
  - virology 11991
- hepatoblastoma 3644–3645
- hepatocellular carcinoma 3609–3610
- hepatotoxic shellfish poisoning (HSP) 4832
- hepatotoxins 2085, 4831
- Hepeviridae* 11991
- herbaceous
  - biomass 1075, 1176, 1202, 2275
  - fuels 9838
  - plants 11398
- herbicides 1286, 2092, 2748, 2751, 4435, 4439, 4472, 5440, 10345, 10349, 10352, 10723, 10748
  - glyphosate 10346, 10351
  - hypersensitivity 10352
  - resistance 10346, 10716
  - resistances 10351
    - mitigating gene flow 10351
    - stacking 10351
- herbicide-resistant
  - crops 10347
  - genes 10349
- herbicide-tolerant
  - canola 4447, 4449–4451
    - Australia 4450
    - Canada 4447
    - global economic impact 4451
    - USA 4449
  - cotton 4446–4447
    - global economic impact 4447
    - USA 4446
  - maize 4444–4445
    - Argentina 4444
    - Canada 4444
    - global economic impact 4445
    - Philippines 4445
    - South Africa 4445
    - USA 4444
  - soybeans 4435, 4438–4439, 4442
    - Argentina 4435–4436
    - Bolivia 4442
    - Brazil 4438–4439
    - Canada 4439
    - global economic impact 4443
    - Mexico 4442
    - Paraguay 4439
    - Romania 4439–4440
    - South Africa 4439
    - Uruguay 4439
    - USA 4435
  - weeds 4530
- herbivore/herbivorous 823, 2504, 5442
  - antibiotic mechanisms 5442
  - antixenotic mechanisms 5442
- clupeiforms 3577
- insects 5438
- species 513
- hereditary nonpolyposis colorectal cancer (HNPCC) syndrome 3607
- heritability 467, 489
- heritable variance 9365
  - effect of group size 9365
- hermatypic coral 2494
- heroin 3590, 10643–10645
- herpes viral vectors 10907
- herpes virus 10906
- heteroatom 5251, 6771
- heterochromatin 2553, 10911
- heterocycle 4653
- heterocyclic hydrazones 4656
- heterogeneous catalyst 4585, 4614
- heterogeneous photocatalysis 9564, 9566
- heterojunction solar cells 7939
- heterologous gene sequence 8046
- heterologous protein production 8030, 8046
- Heterophyidae* 12024
- heterophyid 12025–12026
- heteroplasmy 6169
- heteropoly acid (HPA) 7600, 8339
- heterosis 475, 493–494, 1734, 2736
- heterotroph 823
- heterozygote 479
  - excess method 7980
- hexachlorobenzene (HCB) 4883, 4887, 6995
- hexachlorocyclohexane 10659
- hexaferite 25
- hexafluoropropylene 6511
- hexane 3935
- hexavalent uranium 11223
- hexavalent uranyl ion 11235
- hexazinone 2092
- hexose 982
  - sugar 974
- Heyrovsky reaction 3415, 3420, 3422, 3876
- Heyrovsky–Volmer mechanism 3416
- hidden hunger 1683
- hidden Markov model (HMM) 3117, 3120
- hidden semi-Markov model 10249
- hierarchical fuzzy partitioning (HFP) method 3120
- hierarchical hidden Markov model 10250
- hierarchical location service (HLS) 11562
- high density polyethylene 1635
- high electric conversion efficiency 3851
- high entropy materials 11708
- high nitrate low chlorophyll water 7268
- high resolution transmission electron microscopy (HRTEM) 7739

- high-angle annular dark-field (HAADF) 7739
- high-capacity bus 1896
  - corridors 1902
- high-concentration photovoltaics 9437
- high-density polyethylene (HDPE) 8722, 9983
- higher mixed liquor suspended solids (MLSS) 11968
- highest occupied molecular orbital (HOMO) calculations 6040
- high-level nuclear waste repositories (HLNWR) 8605
- high-level radioactive waste (HLW) 7067, 8589, 11582, 11585
  - treatment 11585
  - vitrification 11585
- highly enriched uranium (HEU) 11203
- high-occupancy toll (HOT) lane 4945, 5021–5032, 5034–5037, 5039, 5041–5044, 6497
  - all lanes priced uniformly 5039
  - average variable cost (AVC) 5034
  - congested drive cycles 5037
  - congestion pricing model 5037
  - cost of infrastructure 5026
  - demand 5028
  - demonstration Effect 5043
  - diversion 5029
  - dynamic demand schedule 5035
  - eligibility requirements 5025
  - enforcement cost 5025
  - equity 5041
  - exemptions 5030
  - features of priced lanes 5023
  - hypercongestion 5028
  - inefficiency 5034
  - land use impacts 5042
  - lexis lanes 5041
  - loss of capacity 5026
  - management 5022
  - marginal cost (MC) 5034
  - microeconomic theory 5025
  - monopoly 5030
  - multiclass networks 5032, 5043
  - multiclass service 5024, 5039
  - network effects 5037
  - nonoptimal pricing 5036
  - number of priced lanes 5032
  - performance objectives 5025
  - price volatility 5031
  - pricing alternatives 5032
  - public–private partnerships 5044
  - related markets 5037
  - revenues 5030
  - safety 5025
    - cost 5025
  - some lanes priced 5039
  - travel time reliability 5030
  - utilization 5028
  - value
    - of travel time savings 5029
    - of travel time (VOT) 5027
    - pricing 5021
- high-occupancy vehicle (HOV) 5022, 5032
  - discounts 5032
- high-occupancy vehicle (HOV) lane 1865, 4945–4954, 5024–5025, 6005, 6496
  - access treatments 4947
  - allowed vehicles 4947
  - case studies 4951
  - concurrent flow lane 4946
  - design 4948
  - dynamic pricing 4954
  - effectiveness 5025
  - enforcement 4948
  - exclusive lanes 4946
  - facilities 1821
  - marketing 4950
  - microeconomic theory 5025
  - operating Hours 4947
  - park-and-ride lot 4952, 4953
  - peer-enforcement 4949
  - planning 4948
  - precursor 5024
  - public information 4950
  - routine enforcement 4949
  - selective enforcement 4949
  - special enforcement 4949
  - supporting facilities and services 4947
  - transit stations 4952
  - travel-time savings 4953
  - types of lanes 4946
  - vehicle-occupancy requirements 4947
- high-performance building 10195, 10261, 10308
  - integrated design 10308
- high-quality energy storage system 5104
- high-resolution mapping 2697–2698
- high-speed
  - motors 11544
  - rail systems 4929, 6247, 6258, 6271, 6497
    - development 4929
    - technology 4929
  - train 4930–4934, 4936–4942
    - cooperation with airlines 4939
    - development 4930, 4942
    - economic costs 4937
    - energy source 4942
    - environmental sustainability 4941
    - financing strategies 4937, 4938
    - infrastructure capabilities 4931
    - inter-city express 4936
    - MAGLEV 4934
    - main planning principles 4936
    - network 4930
    - number of stations 4937
    - route capacity 4938
    - Shinkansen Model 4932
    - socio-economic impacts 4940
    - spatial development 4934
    - spatial imbalance 4940
    - station location 4936
    - sustainability 4931
    - TGV 4933
    - tilting trains 4933
    - transport impacts 4938
    - tunneling effects 4940
- high-temperature
  - chlorine corrosion 9829
  - electrolysis 9938
  - Fischer–Tropsch (HTFT) technology 2225
  - fuel cell (HTFC) 5138, 5140–5142, 5145, 5154, 5157
    - electrochemical and catalytic processes 5141
    - external reformation configurations 5145
    - fuel flexibility 5138
    - fuel processing relationship 5138
    - internal reformation (IR) 5140, 5145
    - representative performance characteristics 5145
    - subsystem 5142
  - polymer electrolyte membrane fuel cells (HT-PEMFC) 7867
  - superconducting (HTS) 6254, 6257, 6290, 11185
- high-voltage DC transmission 9347
- highway 5657, 5658
  - drainage systems 5657
  - relocation 5658
  - flooding 5653
  - trucks 6284
- histamine-producing bacteria (HPB) 9104
- histone 8, 3604, 6159–6160
  - acetylation 6159
  - methylation 6160
  - phosphorylation 3604
  - sumoylation 3604
  - ubiquitinylation 3604

- Hitachi Zosen Inova 4987
    - energy-from-waste 4960
    - navigator 4975
    - semidry FGT process 4987
    - steam boiler 4976
    - technology 4994
  - Hittorf number 3878
  - HIV infection 11137
  - H-metasomatism 5218
  - Hoffmann analyte 10638
  - Hofmann elimination
    - degradation 379
    - reaction 375
  - holding strategy 104, 106
  - holistic system 190
  - holobiont 2493
  - Holocene 9803
    - reefs 2492
  - hologram 2866
  - Holothuroidea* 12047
  - Holstein cattle 1759
  - HO/MA polymers 6924
    - dynamic mechanical properties 6924
  - home composting 11657
  - homogeneous
    - catalysis 3938
    - charge compression ignition (HCCI) 5541
      - engines 5540
      - ignition control 5541
    - nucleation 117–118
    - photo-Fenton 9564
  - homography 10601
  - homologous recombination (HR) 10902
    - pathway 10822
  - Homopteran plant pest 4033
  - homoserine 10843
  - homozygosis 10891
  - homozygote 479
  - hookworm 12007
  - Hopper dredge 3035, 3037, 3044
  - horizon/horizontal
    - axis wind turbines (HAWTs) 3399
    - deformation 4211
    - grate 6457, 6459
    - luminance 2818
  - hormesis 3255–3256, 3666
  - hormonally active agents 11961
  - horse 388, 1806
    - breeding 1796–1801, 1803–1805, 1807
      - autochthonous breed 1797
      - Bayesian animal model method 1800
      - Bayesian Thurstonian models 1807
      - effective population Size 1801
    - estimated breeding values (EBVs) 1798
    - genetic drift 1803
    - genetic evaluations 1798
    - genetic parameters 1797
    - genetic progress 1800, 1804
    - genomic breeding values (GEBVs) 1807
    - goals 1797
    - heritability of racing performance traits 1798
    - important traits 1799
    - inbreeding 1801, 1804
    - international genetic evaluations 1800
    - Interstallion project 1800
    - multiple trait (MT) AM-BLUP procedures 1799
    - multistage selection 1801
    - pedigree file 1799
    - registration of pedigree files 1797
    - selection 1798
    - thoroughbred population 1805
    - Thurstonian model 1800
    - timeform ratings 1805
  - culture 1807
  - populations 1801–1802
    - estimates of genetic trend 1802
    - genetic Progress 1801
    - racing performance 1806
- horsehead pump 7804
- horticulture 2186
- Horton runoff 3222
- hospital waste 5244
- host cell proteins 8065
- host coral 2493
- host DNA 10901
- host eradication 2560
- host resistance 2566
- hot box oven 9495
- hot carrier solar cell 9427, 9428
- hot dry rock (HDR) 3504, 4352
  - resources 4166
- hot gas cleaning 1438
- hot ice
  - gas hydrate research 337
  - No. 1 well 339
- hot mix asphalt baghouse fines 11701
- hot pool 4218
- hot spot 4183
- hot spring 4218, 4358
- hot water boiler 1345
- hot-air heating system 1402
- hot-air turbine 1410, 1419
- hourly clearness index value 9751
  - probability distribution 9751
- household
  - cooking 1300
  - furnaces 10586
  - voltages 12080
  - waste 8819, 10009
- HSI-based technology 8844
- Hubbert curve 7448–7449
- human biology 2262, 4893
- human diet 1566
- human earth system 5403, 5418
- human ecosystem 3286, 11329
- human enteric virus 11986
- human eukaryotic cell 498
- human eye 47
- human fish 2799
- human footprint 2745
- human genome 3608
- human health 2263, 8919, 9156
  - hazards 4860
  - remote sensing applications 8919
  - sentinel species 9156
  - well-being 2263
- human immunodeficiency virus (HIV) 4996, 5000–5008, 5010, 5012–5014, 5352, 10905
  - basic virology 5000
  - candidate vaccines 5012
  - cause of AIDS 5002
  - clinical management 5012
  - cytotoxic T cell (CTL) response 5352
  - epidemiology 5003
    - of the global pandemic 5003
  - genetic diversity 5008
  - genome 5002
  - global epidemic 4996
  - heterosexual transmission 5007, 5010
  - high-risk populations 5005
  - homosexual transmission 5010
  - immunogenicity 5012
  - incidence 5004
  - injecting drug use 5006
  - mathematical models 5352
  - mother-to-child transmission 5003, 5007, 5014
  - phylogenetic analyses 5008
  - postexposure prophylaxis (PEP) 5007
  - preexposure prophylaxis (PrEP) 5007
  - prevention 5006
  - public health efforts 5013
  - recombinant viruses 5010
  - replication cycle 5001
  - safe sex 5007
  - sexual transmission 5003, 5007

- subtypes 5010
- treatment 5010
- type 1 (HIV-1) 4999
- vaccine 5006
- human lysozyme (hLZ) 2967
- human metabolome database (HMDB) 1186
- human milk 10879
- human pathogen 2263
- human polyomavirus 6329
- human society 940
  - global urbanization 940
  - urban growth 940
- human toxicity potentials (HTPs) 4856
- human visual sense 47
- human visual system (HVS) 11098, 11101
- human waterborne infection 11997
- human-scale landscape 5774
- humanure 1151
- Humboldt ecosystem 540, 578
- humid air
  - distillation (HAD) 9760
  - turbine (HAT) 6823, 6849
- humidification 3866
- humidity 132
- humpback whales 3570
- humus
  - balance 1137, 1509
  - formation 1137
    - repro-method 1137
    - site-adapted Balancing Method 1137
    - VDLUFA-Method 1137
- hunger 1741
- hurricane 5070, 7402
  - synoptic flow 5072
  - tracking with driftsondes 5070
- hybrid
  - braking system 8848, 8851
  - breeder 390
  - capacitor system 3439, 3440
  - carbon ultracapacitors 3486
  - constructed wetlands 11903
  - cooker 9494–9495
    - electric storage models 9495
  - cookers 9491, 9495
  - drive train 3380, 3383
    - speed coupler 3383
    - torque coupler 3380, 3383
  - electric buses 11509
  - electric vehicle (HEV) 710, 768, 3367, 3860, 3368, 3870, 3392–3393, 3855, 5082–5087, 5089–5091, 7847, 8112, 8232, 10542, 11503, 11504, 11506
    - architecture 5085, 5087, 5091
    - battery 5087, 5090
    - configuration 11506
    - diesel HEV 5089
    - electric propulsion 5089
    - energy management 11506
    - energy storage 5089
    - four-pole induction motor 5091
    - fuel cell powered 3860
    - gasoline-powered 8232
    - off-road 5089
    - parallel HEV 5087
    - plug-in 3393
    - power boost 11504
    - series HEV (SHEV) 5085, 5086
    - track-type tractor 5091
    - ultracapacitor 5087
    - vehicular propulsion 5085
  - energy storage 3392, 5103, 5104, 5110
    - vehicle applications 5103
  - food processor 9500
  - geothermal biomass power station 4323
  - geothermal cycles 4309
  - geothermal fossil fuel power station 4322
  - geothermal power station 4321, 4323, 4329
    - two-phase turbine 4329
  - hydraulic vehicle 5097–5098
    - energy storage 5097
    - high-pressure (HP) accumulator 5098
  - hydraulic vehicles (HHV) 5097, 5100, 5101
    - energy storage accumulator 5100
    - regenerative braking 5100
  - imaging 8587
  - membranes 6561
  - poplar 1286, 1294
  - propulsion 268
  - recooling 9534
  - rice 8019
  - systems 3426
  - technology 3868
  - VAR systems 9344
  - vehicle 3486, 3371–3372, 3377, 3379, 3390, 3472, 3477, 5104, 5107
    - architecture 3371, 3372
    - charge-sustaining 3477
    - concept 3371
    - electric coupling 3377
    - electric load 5104
    - flywheel 5107
    - fuel cell-powered 3390
    - mechanical coupling 3379
    - ultracapacitor 5107
  - ventilation 6873, 10269, 10334
- hybrid-electric
  - passenger car applications 3482
  - vehicle (HEV) 3496, 3499, 3472, 10490, 10488, 10495
    - architecture 10495
- hybridization 2371
- hybrid 392–393
- hydrasun 9666
- hydrate 330, 7453
- hydraulic
  - accumulator 5099
  - dredging 3034, 3041
  - fracturing 6846, 7804
  - hopper dredge 3037
  - hybrid vehicles (HHV) 3371
  - motor 5098
  - stress 2080
  - technology 3031
  - theory 6413
- hydrazine 6780
- hydride 3417
- hydrocarbon 209, 331, 1174, 1394, 1441, 1586, 2156, 2241, 2434, 2945, 3502, 3907, 3958, 5162, 5531, 6406, 6416–6417, 6551, 7594, 10482, 10483, 11444–11445, 11452
  - from alcohols 11452
  - from carboxylates 11452
  - from lignocellulose 11452
  - from sugar 11452
  - fuel 2153, 2936, 2939, 5154, 5531
    - burning 2153
    - oxidation 2936
  - gasification 5162
  - industry 3504
  - ionomers 6541, 8336–8337
    - membranes 6544, 6548, 6551
  - membrane 3930, 7705, 7771–7772, 8251
  - micro-seepage 6416
  - oxidation 2946, 2950
  - pollution 769, 1633
  - polyaromatic 5531
  - polymers 6557
    - with superacid groups 6557
  - proton exchange membrane 8334
    - non-fluorinated 8334
  - refining 2154
  - reformation 5140
    - endothermicity 5140
    - process 5161
  - resources 6406
  - synthesis 3958
  - thermal stability 2945
  - unburned 10483
  - utilization 2938

- hydrocele 12011
- hydrochloric acid 4010
- hydrochlorofluorocarbon 10132
- hydroconversion process 2246
- hydrocoral 2498
- hydrocracker gas 7842
- hydrocracking 2246, 3978–3979, 7834
  - heavy paraffins (Wax) 3978
- hydrocyclone 8825
- hydrodynamic 9060
  - tidal model 4579
- hydrodynamism 1949
- hydroelectric
  - generators 12080
  - plant 8985
  - power plant 2795
- hydroelectricity 3464, 8981
- hydrofiner 1221
- hydrofluoric acid (HF) 786, 791
  - alkylation 7836–7837
- hydroformylation 3939, 3940, 3946–3947, 3949, 3950, 10175
  - CXL-based 3949
  - of higher olefins 3947
  - of olefins 10175
- hydrofracturing 4188
- hydrogen 668, 1043, 1051, 2228, 2382, 2385, 3387, 3414–3415, 3417–3418, 3420–3422, 3425, 3500, 3858, 3927–3928, 4067, 5116, 5118, 5135–5138, 5141–5143, 5147, 5149, 5152–5154, 5158, 5160, 5165, 5167, 5170–5171, 5173–5174, 5189, 5203, 5210, 5226–5227, 5484, 5486–5487, 7882, 8195, 8205, 8208, 8221, 8232, 8235–8236, 8239, 10506, 10515–10519, 10997, 11000
  - adsorption 3421
  - autothermal reforming (ATR) 8221
  - binding strength 3418
  - biological production 5116
  - catalytic partial oxidation (CPO) 8221
  - cation 8208
  - chlorine (HCl) 5252, 7843, 8350, 9831, 11712
    - emissions 2282
  - consumption 3500, 5118
    - by fuel cell vehicles 10517
  - coproduction system 5158
  - cryo-adsorbed 8235
  - cyanide 10639
  - delivery 10517
  - direct injection 5487
  - dilution 9244
  - economy 5174
  - efficiency 5152
  - electrochemical
    - production 3414, 3425
    - pumping 8195
  - electrode 5888, 6949
  - electronic coupling 3418
  - engine efficiency 5487
  - evolution 3418, 3421
    - at metal electrodes 3420
    - catalysts 3422
    - reaction (HER) 3414
  - fluoride (HF) 8350
  - food production 5160
  - for fossil fuel refining 4067
  - for oil refining 5160
  - from biomass 5116, 5131
    - market implementation 5131
  - from fossil fuels 5137
  - fuel 2939, 5195, 5210, 6246, 7088, 7757
    - fuel cell 8219, 8329
    - fuel initiative (HFI) 8236
    - fueling station 8194, 8236
  - fuel-cycle pathways 10516
  - gas 7593, 8175
    - cleanup system 5170
  - ions 5165
  - isotope 11027
  - life-cycle analysis 10519
  - liquefaction 10517
  - low energy density 5171
  - metabolism 362
  - molar concentration 5149
  - molecules 3418, 7896
  - nucleus 3800
  - oxidation 3418, 5138
    - reaction (HOR) 3414, 7732, 7757, 8208, 8232, 8340
  - peroxide 3565, 3662, 8215, 8242, 8278, 8340, 9575
    - propylene oxide 7591
  - photocatalysis 5189, 5203, 5210
  - pipelines 8235
  - plasma 9242
  - poly-generation 5138
  - producing ammonia for fertilizer 5160
  - production 363, 3862, 5119, 5123, 5131, 5133, 5137, 5147–5148, 5150–5151, 5158–5160, 5162, 5164–5167, 5170–5171, 5178, 5181, 5187, 5189–5190, 5194–5197, 5200, 5206, 5209, 7883, 7888, 7895–7896, 7898, 10516–10517
  - addition of iodide 7898
  - bifunctional Pt-based system 5209
  - biochemical pathways 5131
  - biological production methods 5164
  - bulk stack 5147
  - by dark fermentation 5119
  - by solid biomass gasification 5123
  - CO loss 5181
  - cobaloxime system 5200
  - cobalt complexes 5197
  - comparative efficiency analyses 5150
  - compression 10517
  - costs 2385, 5171
  - dissolved additives 7896
  - electrochemical 5187
  - electrolysis cells 5167
  - enteric-type mixed-acid fermentation 5166
  - external reforming 5148
  - from algae 5167
  - from high-temperature fuel cells 5133
  - fuel cell coproduction 5170
  - methods 5160
  - microbial electrolysis 5167
  - multiphotonic system (Z-Scheme) 7895
  - nanophotocatalytic 7883
  - pathways 10518
  - photobiological 5165
  - photocatalyst 5190, 5194, 5195, 5206, 7883, 7888
  - photochemical 5187, 5189, 5196
  - photochemical water reduction 5178
  - photofermentation 5167
  - photoinitiated charge separation 5178
  - photoinitiated electron collection (PEC) 5178
  - photolytic process 5164
  - pressure swing adsorption (PSA) 5158
  - Rh-based supramolecular and multicomponent systems 5189
  - Rh-based multicomponent photocatalysis 5197
  - science 5159
  - steam methane reformers 5137
  - Strickland reactions 5166
  - supplemental input method 5151
  - technology 5159
  - thermal efficiency 5151

- thermochemical sulfur–iodine cycle 5162
- thermochemical Westinghouse cycle 5162
- via electrolysis 10516
- via steam methane reforming 10516
- via wind energy 10516
- water electrolysis method 3862
- pump 8196
- purification 5143, 8195
- radioactive isotope 10997
- reforming process 8221
- separation 5135, 5136, 5141, 5143, 5149, 5152, 5170
  - parasitic loads 5149
  - pressure swing adsorption (PSA) 5143, 5170
- stable isotopes 5227
- starvation 7766
- steam reforming (SR) 8221
- storage 5486
  - in fuel cell vehicles 10517
- sulfide 2025, 4171, 4176, 4247, 4426, 6381–6382, 6660, 8353
- supply chains 5153
- thermochemical biomass processes 5116
- thermodynamic theory 3414
- transport impacts 5152
- underpotential deposition (UPD) 3415, 3420
- vehicle 268, 5136, 8239
- via direct solar production 5173
- vibration 3417
- well-to-tank efficiencies 5142
- well-to-tank (WTT) efficiencies 5142, 5153
- yield 5119, 5147
- hydrogen–air fuel cells 8225
- hydrogen-containing fuels 3887
- hydrogen-dilution gas flow ratio 9245
- hydrogen-oxygen fuel cell 7695
- hydrogen-powered vehicles 5465
- hydrogenase 362, 3422, 3423, 5211, 11004
  - iron-based 5211
  - enzyme 10999
  - organometallic nature 3423
- hydrogenated silicon 9251–9254, 9256–9258, 9272
  - amorphous 9251, 9254
    - to microcrystalline Si:H properties 9257
  - bandgap 9252
  - Collins-Cody gaps 9252
  - defects in the  $\mu\text{c-Si:H}$  material 9272
  - electron and hole transport properties in  $\mu\text{c-Si:H}$  9258
  - films 9256
  - germanium alloys 9247
  - materials 9243, 9245, 9258
    - Fermi level 9258
    - Si:H-based materials 9243
  - microcrystalline 9241
  - nanocrystalline 9241
  - Tauc's gap 9252
  - Urbach edge 9253
  - Urbach tails 9253
- hydrogenated vegetable oil (HVO) 1206, 1220, 5489
- hydrogenation 3938, 3945, 3950, 3979, 10171–10172
  - asymmetric 10172
  - of isophorone 10172
  - of nitro compounds 10172
  - of phenol 10172
- hydrogenolysis 2228
- hydrography 5875–5876, 8658
- hydrolases 10845
  - in the gastrointestinal tract 10845
- hydrologic/hydrological 2455
  - cycle 2108, 2320–2321, 3317, 7245, 8643, 8689, 9804
  - restoration 8692
  - evaluation of landfill performance 5725
  - models 3212, 5824
    - three-dimensional (3D) 3212
  - process 8635
  - systems 9011
    - tracer test 9011
- hydrology 1546, 3585, 4574, 11334
- hydrolysate 974, 977
- hydrolysis 966–968, 972, 1149–1150, 9052
  - concentrated acid 966
  - dilute-acid 967
  - enzymatic 967, 972
  - fermentation (SHF) 993
  - pretreatment 968
- hydroperoxide 3662, 6543
- hydrophilic compounds 11930
- hydrophobic
  - compound 10967, 10969
  - membranes 10537
  - organic matter 10537
  - pocket 8135
- hydroponics 8202–8203
- hydro-power 3456, 8976, 11934, 11942, 12118, 12120, 12240, 12246
- investments 12118
- reservoir 12119
- station 12102
- system 12109
  - market process 12109
- hydrosphere 595
- hydrostatic pressure 4128
- hydrostatic primitive equation 7370
- hydrotalcite 4600
- hydrothermal
  - brine 5231
  - carbonization 1068, 1080, 1082–1083, 9849
    - commercialization 1083
    - energy balance 1082
    - flue gas 1083
    - wastewater 1082
  - convective systems 4331
  - eruptions 4426
  - fluid 5223, 5227
    - concentration of silica 5223
    - geochemical modeling 5227
  - liquid 5224
  - reservoir 4192, 4227
  - resource 3512, 4330, 4351
  - system 3509, 3511, 5216–5217, 5219–5220
    - cap rock 5217
    - geochemistry 5216
    - geothermometers 5220
  - upgrading (HTU) 1081, 1085, 1614
  - vents 11389
- hydrothermolysis 969
- hydrotransport 7810
- hydrotreating 1221, 1613, 2247, 3979, 7834
  - light paraffins 3979
- hydroxide 2432, 8606
  - apatite 3895
  - ions 3898
- hydroxyl
  - functional triglycerides 6898
  - radicals 9563, 9568
- hydroxyl-ibuprofen 11926
- hydroxyl-interlayered smectites (HIS) 8605
- hydroxyl-interlayered vermiculites (HIV) 8605
- hydroxylamine 381
- hydroxyproline-rich glycoproteins (HRGPs) 8064
- hyflon 7704
- hygromycin phosphotransferase 2597
- hygroscopic inorganic oxide 8339
- hygroscopicity 6747, 10571
- hyoscyamine-6 $\beta$ -hydroxylase 6531



- hyperbolic equations 8907
  - hyperion 8944
    - sensor 8928
  - hypermethylation 3257, 3607
  - hyperparasitemia 11076
  - hyperspectral
    - imaging (HSI) 8806, 8817
    - for the coastal ocean (HICO) 8960
    - satellite sensors 8928
  - hypertension 9657
  - hypertensive lung syndrome 8317
  - hypnozoiticide 11086
  - hypomethylation 3608
  - hyponatremia 3253
  - hypospadias 3648
  - hypovigilance 3120
  - hypovitaminosis 9654
  - hypoxic water 7347
  - hypsicity 4623
  - hysteresis 3225
  - Hysterothylacium* 12036
- I**
- ibuprofen 2092, 2339, 4592, 11924
  - ICE, see internal combustion engine
  - ice 2761–2762, 2765, 2767–2768, 2771, 2774
    - ablation 2765
    - accretion 2765
    - accumulation 2765
    - modeling 2762
    - rheology 2768, 2774
    - stress tensor 2767
    - warm-based 2771
    - cloud 661
      - Ice Cloud and land Evaluation Satellite (ICESat) 320
    - dynamics 2770
    - ice mass loss 2459, 4563, 4575
      - dynamic thinning 2459
    - nuclei (IN) 134, 630, 6747
    - sheet 286–288, 292, 2458, 2460, 2513, 2762, 2763, 2769, 2771, 2775–2776
      - airborne radar ice sounding 292
      - computational considerations 2771
      - geometry 2776
      - Huybrechts model 2763
      - InSAR measurements 287
      - mass changes 4570
      - mass loss 288
      - modeling 2769
      - regional image mapping 286
      - simulations 2775
    - sounding radar 283, 294
    - strength 2775
    - thickness distribution (ITD) 2763
    - velocity 2772
    - volume 2773
  - ice-albedo feedback 2762
  - ice-atmosphere interface 2766
  - iceberg calving 2766
  - IceBridge program 284, 293
  - icefield 2762
  - icelandic horse 1798, 1803
    - breeding goal 1803
  - ice-ocean interface 2775
  - ice-rafted debris (IRD) 9803
  - ice-thickness distribution 2772
  - icosahedron 586
  - ICSI-mediated gene transfer (ICSI-MGT) 10826
  - icy surface 281
  - ideal gas law 8905
  - identity preservation measures 10779
  - idiotype 8066
    - breeding 6434
    - vaccines 8067
  - igloo 6869
  - ignition 1303, 5254
    - air preheating 5254
  - illegal dumping 10028
  - illicit radiological material trafficking 7212
    - border and port monitoring 7212
  - illuminance 2807–2808, 2816, 2823, 2826–2827, 2829, 2832
    - availability 2823
    - visualization 2826
  - illumination 2806–2808, 2831
    - direct components 2807
    - indirect components 2808
    - of the building 2831
  - imager response model 11111
  - Imhoff tank 1148
  - imidazole 8344
  - immobilized microbe bioreactor (IMBR) 1635
  - immune-reconstitution syndrome (IRIS) 11138
  - immunoassay 5384
  - immunochromatography 5383
  - immunosuppression 9663
    - UV-induced 9663
  - implantable cardiac defibrillator (ICD) 6087, 6507, 6510
    - batteries 6507
  - implantable cardiac pacemaker 6501, 6502, 6506
    - batteries 6502
  - imprinted gene 6161
  - improved cookstove (ICS) 1302
  - in situ
    - chemical oxidation 10152
    - mining 6680
    - vitrification 11591
  - in trans silencing capacity 10681
  - in vitro
    - fertilization (IVF) 10819, 10906
    - maturation (IVM) 6154, 10819
  - inactivated polio vaccine (IPV) 8148, 11989
  - inbreeding 400, 410, 413, 418, 440, 442, 474–475, 492, 1734, 1803, 6440, 7978, 9390
    - coefficients 442
    - depression 1801, 2785
    - horse populations 1803
  - incident photon to current conversion efficiency (IPCE) 6575
  - incident radiation 7910
    - spectral composition 7910
  - incinerability ranking 6977, 6988, 7001
    - thermal stability-based 6977, 7001
  - incineration 2449, 3997, 4869, 4903, 5235, 5237, 5241–5242, 5249–5253, 5256, 5267, 5270, 5282, 5288, 5290, 5300–5301, 5303–5304, 6976, 6989–6990, 10578, 10582, 11852–11853, 11858
    - alternatives 3997
    - ashes 4867
    - carbon dioxide concentration 5250
    - chlorinated compounds 5252
    - combustion air 5237
    - cool zone 6990
    - corrosion problems 5301
    - cost 5242
    - dioxins 5267, 5288
    - energy balance 5303
    - environmental pollution 5288
    - facility 11841
      - projected energy losses 11841
    - flame zone 6989
    - FLIC code 5304
    - flue gases 5300
    - formation of pollutants 5251
    - hazardous waste 5256
    - heat content of waste 5253
    - heat recovery 5241
    - high-temperature, non-flame thermal zone 6989
    - in a molten salt bath 5282
    - incomplete combustion 5250
    - mass balance 5303
    - modeling equations 5304

- non-flame 6976
- plants 4763
  - availability 5242
- potential by-products 6989
- pre-flame zone 6989
- products 5249
- public acceptance 5242
- public image 5288
- safety aspects 5256
- simple, small-scale forms 5270
- slagging operation 5290
- surface catalysis zone 6990
- technologies 5235
- thermogravimetric analysis (TGA) 5304
- train 4972
- with combined heat and power (CHP) 5301
- incinerator 4000, 5247, 5248, 5253, 5255, 5257, 5259, 5260, 5264, 5268, 5272, 5276, 5289, 5296, 5309
  - boilers 5257
    - design 5264
  - computer fluid dynamics (CFD) 5259
  - design aspects 5259
  - draft 5248, 5260
  - emissions 5289
  - furnace 5237, 5257, 5258, 5270
    - air supply 5258
    - ash extraction 5257
    - capacity 5255
    - duties 5257
    - feeding equipment 5257
    - flow patterns 5258
    - types 5270
    - selection criteria 5270
  - grate
    - combustion 5296
    - type 4000
  - heat recovery 5264
  - load factor 5255
  - mechanical grate stokers 5272
  - mechanical drives 5260
  - NO formation 5309
  - operating factors 5268
  - plants without heat recovery 5264
  - reciprocating grates 5272
  - regulation and controls 5260
  - residence time 5248
  - residues 5253
  - rotary kiln plant 5276
  - stoichiometry 5248
- income 213
  - environmental factors 213
- incomplete combustion 6989
  - zone theory of formation of products 6989
- Inconel 4979
- in-core radiolysis 4065
- increased livestock fertility 10885
- incubator 8313
- Indel mutation 3603
- index of refraction 8956
- Indian ocean dipole (IOD) phenomena 4573
- Indian summer monsoon 6753
- indicator organism 3588
- indigenous architecture 10300
- indigenous plants 3462
- indirect aerosol radiative effect 137
- indirect coal liquefaction (ICL) 2224, 2235
  - Fischer–Tropsch process 2224
- indirect field-oriented control (IFOC) 42
- indirect land use change (ILUC) 934, 1010, 1497, 1502, 10513
  - economic input–output models 1502
- indirect radiative forcing effect 135
- indirect solar drier 9488
- indirect solar gain 7661
- indirect storage concepts 10567
- indium 1978
- individual attitude–behaviour gap 12226
- individual sustainable mobility 7787
- indoor
  - air pollution 1492, 3640, 11293
  - air quality (IAQ) 5334, 6875, 7630, 11296
    - natural ventilation 6875
  - air temperature 10257
  - environment 5335, 6865
    - environmental control 5335
    - ventilation system design 5335
  - environmental quality (IEQ) 5332–5333, 10278, 10335
  - illumination 2804, 2827
  - pollution 1301
  - smoke 213, 239
- induced pluripotent stem cells (iPS cells) 2972, 7223, 10820, 10827, 10828, 10907
- induced seismicity 4127–4128, 4215, 4422
  - Mohr–Coulomb criterion 4128
- induced systemic resistance (ISR) 2574
- induced-draft cooling tower 9533
- inductance matrix 38
- induction
  - machine (IM) 18, 35, 37, 3392, 12145, 12153
    - fundamental equations 37
  - motor (IM) 44, 11527
    - fault-tolerant control 44
- inductively coupled plasma mass spectrometry (ICPMS) 8657
- industrial
  - boiler 1304
  - bulk 7589
  - catalysts 7589
  - ecology 3454, 8790
  - enzyme 8024–8029, 8051
    - bioconversion of grain to ethanol 8027
    - current uses 8025
    - development of applications 8025
    - global market 8027
    - historical background 8025
    - microbial producer 8029
    - plant-based production 8024
    - plants as sustainable sources 8051
    - production 8028
    - sustainable production 8024
  - facility 7184
    - cost analysis 7184
  - gas turbine 6833
  - gasification 2240
  - hazardous 4903
  - metabolism 6858
  - mineral mine wastes 6669
  - oxidation catalysis 7590
  - plants 8085
    - oil processing 8085
  - pollution 10441
  - proteins 8032
    - production 8044
  - radiography 8523, 8561
  - residues 1180
  - revolution 207
  - stormwaters 11897
  - waste 1179, 1493, 10003, 10004
    - characterization 10004
    - generation 10003
    - wastewater 9564, 9568
- inelastic collision 3789
- inelastic scattering 3801
  - photons 8572
- inert gas 6733
  - step addition (ISA) 6722, 6728, 6730
- inertial confinement fusion (ICF) 7173
  - laser development 7173
- inertial flowmeter 4205
- infant 3625
  - metabolic rate 3625
  - mortality 3621
  - rate of oxygen consumption 3625
- infection kernel 5351
- infectious disease 507, 5347–5349, 5352–5355, 5378, 5362, 5364, 5380–5387, 5392, 6606

- antibody-based diagnostics 5383
- basic reproductive number 5347
- classical culture-based diagnostics 5383
- climate change 5358, 5359–5362, 5364, 5366, 5370–5372, 5380
  - bluetongue 5371
  - chytridiomycosis 5370
  - effects on hosts 5364
  - effects on vectors 5364
  - extreme weather events 5366
  - genetic resistance 5364
  - intensity or severity 5361
  - malaria 5372
  - spatial associations 5360
  - temporal-interannual associations 5361
  - temporal-seasonal associations 5360
- disease control 5381
- endemic stability 5364
- host heterogeneity 5349
- importance of rapid diagnosis 5382
- influence of climate 5362
- infrared spectroscopy 5386
- mathematical epidemiology 5348
- modeling 5347, 5355
- molecular diagnostics 5384
- multilevel models 5353
- Raman spectroscopy 5387
- SI model 5354
- SIR Model 5348
- spectroscopy-based diagnostics 5385
- surface-enhanced Raman spectroscopy 5392
- weather 5359
- within-host evolution of HIV 5352
- within-host models 5347
- infectious pancreatic necrosis virus (IPNV) 548
- infectious parasites 12021
- infectious salmon anemia virus (ISAV) 548
- infective metacercariae 12027
- infiltration fields 11901
- infinite couple 2025
- inflorescence 2703
  - architecture 2703
- influenza virus infection 5379
  - influenza A virus 2970
- information entropy 7542
- infrared (IR) 11114
  - absorption spectroscopy 5385
  - effects 9665
  - radiation 2321, 9666
  - reflection methods (NIR) 9837
  - sensing 11114
- spectroscopy 5386
- thermography 10
- infrasound 12278
- infrastructure 3468
  - maps 3080
  - planning 3468
- infrastructure-to-vehicle communication 3080
- ingestible medical devices 6517
- inhabited area 3527
  - countermeasures 3527
  - remedial actions 3527
- initialization shock 2129
- injection
  - engines 932
  - pump 4289
- inland waterbody 5674
- inner cell mass (ICM) 6151, 6157
- inner-city brownfield sites 11368
- inorganic
  - arsenic 3647
  - chemicals 10144
    - physicochemical properties 10144
  - materials 10560
    - thermal stability 10560
  - photovoltaic (PV) 7554
  - pollutants 2434, 7607
  - pollution 2502
  - semiconductors 7575
  - triple superphosphate 7685
  - waste 11583
- InSAR technique 288
- insect 5438, 5444, 5454, 5457
  - amylases 4031
  - for pollination 10723
  - genetics 4039
    - double-stranded RNA (dsRNA) 4039
  - herbivores 4026, 4030
  - identification 5438
  - natural enemies 5444
  - pathogens 5450–5451
    - bacteria 5451
    - for microbial control 5450
    - fungi 5451
    - nematodes 5451
    - viruses 5451
  - insect pests 4013, 5433, 5452
    - mass trapping 5452
  - introduction of traits 5457
  - population 5436, 5437, 5450
    - aggregated distributions 5436
    - distribution patterns 5437
    - entomopathogenic organisms 5450
    - densities 5435
  - random distributions 5436
  - uniform distributions 5436
- resistance 4013
- sterilizing 5454
- insecticidal
  - genes 4029
  - protein 4014, 4037, 4038
    - avidin 4038
    - *Photorhabdus luminescens* 4037
- insecticide 2747, 3594, 4035, 4454, 4457, 4467, 5440, 5459, 10748, 11078–11079, 12003
  - against malaria 12003
  - resistance 5457
    - detection 5457
    - monitoring 5457
- insect–plant interactions 5442
- insect-resistant
  - cotton 4457–4458
    - Argentina 4458
    - Australia 4457
    - Brazil 4461
    - China 4457
    - global impact 4462
    - India 4460
    - Mexico 4459
    - South Africa 4460
    - USA 4457
  - maize 4453–4454, 4456
    - Argentina 4453
    - Canada 4453
    - economic impact 4457
    - South Africa 4454
    - Spain 4454
  - potatoes 4464
  - transgenic crops 4039
    - sustainability 4039
- instantaneous clearness index 9751
- Institute of Electrical and Electronics Engineers (IEEE) 3007
- institutionalization 12221
- instrumental knowledge 4535
- instrumented vehicle 3086, 3088
- insulation 2998, 7634
  - comfort principle 7634
  - materials choices 7634
- insulin 8027, 8067
- insurance nitrogen 3777
- integral fast reactor (IFR) 4057, 7150
- integral line-beam skyshine method 8553
- integral shading devices 3688
- integrated aquaculture 6366
- integrated assessment modeling (IAM) 5398–5402, 5412, 5414, 5416–5417
  - economic costs 5417

- higher resolution 5400, 5402, 5422, 5424
  - climate impacts 5422
  - integrated Earth System Models (iESMs) 5424
- highly aggregated 5400, 5401
- in mitigation policy analysis 5412
- multiple greenhouse gases 5414
- stabilization studies 5416
- integrated breeding 6695, 6702, 6703, 6705, 6708
  - helpdesk 6703
  - hubs 6708
  - portal 6703
  - platform 6702
  - workbench 6705
- integrated building design 10245
- integrated coastal zone management (ICZM) 513, 554, 1968, 9189
- integrated combined cycle gasification (IGCC) 2240
- integrated delivery process 10294
- integrated design
  - practice methodologies 10315
  - process 10308
- integrated Earth System Model (iESM) 5424
- integrated electrokinetic remediation technology 10429
- integrated gasification 6847
  - combined cycle (IGCC) 1216, 1438, 8105, 8350
  - fuel cell plant (IGFC) 9930
- integrated gross oil refining (IGOR<sup>+</sup>) 2232
- integrated hydro-economic modeling 5828
- integrated mariculture 9117
- integrated marine biogeochemistry and ecosystem research (IMBER) project 6383
- integrated multi-trophic aquaculture (IMTA) 543–544, 1928, 1937, 3581, 6309–6311, 6313–6314, 6316, 9111, 9117, 10322, 10324
  - biological and chemical processes 6313
  - biological aspects 6316
  - economical aspects 6316
  - engineering aspects 6316
  - history 6311
  - land-based 6310, 6312
    - nutrient budget 6312
  - nutrient composition 6314
  - pilot scale systems 6314
  - variations 544
- integrated nutrient management (INM) 162
- integrated ocean drilling program (IODP) 6408
- integrated pest management 153, 5428, 5429, 5432, 5434, 5443, 5447–5450, 5452–5453, 5455–5456, 5458
  - behavioral control 5452
  - biological control 5443, 5447–5448, 5450
  - biotechnology 5456
  - compatibility of pheromones 5453
  - crop diversification 5449
  - cultural control 5455
  - economic threshold 5432
  - genetic control 5453
  - genetically modified (GM) crops 5456
  - host-plant resistance 5456
  - implementation 5458
  - microbial control 5450
  - pheromones 5452
  - precision agriculture 5434
  - strategy 5432
  - sustainability 5432
  - tools 5434
- integrated project delivery (IPD) 10307
- integrated satellite tracking of pollution (ISTOP) 7517
- integrated sequential bio-refinery (ISBR) 561
- integrated starter-generator (ISG) systems 11548
- integrated two-stage liquefaction (ITSL) 2231
- integrated waste management 11682–11683, 11688, 11691, 11828
- integrated water resources management 5827
  - decision-making support systems (DSS) 5827
- integrated water vapor (IWV) 9724
- integrated wind plants 12257
- intelligence quotient (IQ) 3633
- intelligent
  - energy 8206
  - islanding 12092
  - load shedding 12093
  - transportation system (ITS) 91, 1820, 1835, 1852, 3082, 4955, 5967, 11455
  - vehicle (IV) 3080, 3108, 3170, 3172, 3176, 5460, 6950, 11097, 11187
    - driver inattention monitoring system 3108
  - dynamic environment sensing 3170
  - laser scanners for perception 3176
  - night vision pedestrian warning 6950
  - safety system (IVSS) 73
  - technologies 2464, 5460
- true color night vision video systems 11097
- unscented Kalman filter 11187
- inter-tropical convergence zone (ITCZ) 7251
- interacting ecosystem 1954
- interagency ocean research plan 2261
- Interbull 396
- intercalation electrode 6123
- intercity highway truck 6284
- interconnected power system 12093
- intercooled recuperated engine (ICR) 6849
- intercrop 151, 156, 1123, 1579, 2741, 2751, 5449, 10046
- intercrystallite ionic transport 724
- interdigitated back contact solar cells 7939
- interface/interfacial
  - compartment model 9129
  - electronics 3495
  - infrastructure 7856
  - mass transfer 2026
  - transformer 3018
- interference competition 10075
- interferometer 288
- interferometric synthetic aperture radar (InSAR) 4575
- intergovernmental panel on climate change (IPCC) 2099
- interior energy input 4138
- interior permanent magnet (IPM) 23
- interior shading 3690
- interior systems 10290
  - sustainability 10290
- intermediate 11439
  - cells 10907
  - heat exchanger (IHx) 4060, 4068
  - level semiconductors (ILSC) 9424
  - pyrolysis 1518, 1524
    - principles 1524
    - process technology 1524
- internal combustion engine 250, 1404, 3371, 3860, 3868, 5461, 5463, 5499, 5502, 5501, 5505–5512, 5515, 5518–5519, 5521, 5522, 5525, 5528, 5529, 5535, 5537, 5538, 5542, 7694, 10482, 10488, 10490, 11485, 10502
  - advanced engine controls 5537
  - alternative fuels 5461, 5463, 5542
  - basic operating cycle 5502
  - boosting 5535
  - charge heating 5509
  - combustion duration 5528
  - combustion efficiency 5510
  - compression ignition engines 5525
  - developments 5499
  - diesel cycles 5511

- cycle analysis 5519
- emissions formation 5529
- engine downsizing 5535
- engine-out emissions 5535
- exergy 5518
  - destruction 5521
- exhaust pollution 5529
- friction 5507
- fuel conversion efficiency 5507
- fuel–air cycle analysis 5512, 5515
- fuel–air equivalence ratio 5518
- gross work 5506
- in-cylinder work 5505–5506
- Otto cycle 5511
- power/torque/speed curve 5507
- pressure–crankangle diagram 5505
- pump work 5506
- quasi-static effects 5509
- ram effect 5509
- spark ignition combustion 5522
- thermal efficiency 5510
- thermodynamic analysis 5510
- torque-speed characteristic 11485
- tuning 5509
- variable geometry engine designs 5537
- variable valve timing 5538
- internal combustion engine vehicles 11316, 11503
- volumetric efficiency 5507
  - curve 5508
- internal concentration polarization 2918
- internal dosimetry 3023
- internal heat transfer 10572
  - Sandwich concept 10572
- internal ribosome entry site (IRES) 10848
- internalin 5058
- International Atomic Energy Agency (IAEA) 8486, 8612
- International Building Performance Simulation Association (IBPSA) 10194
- International Commission on Radiological Protection (ICRP) 3519, 11046
- International Electrotechnical Commission (IEC) 3007
- International Geosphere-Biosphere Program (IGBP) 8920
- International Lead Association (ILA) 5884
- International Nuclear and Radiological Event Scale (INES) 8504
- International Nuclear Event Scale (INES) scale 10426
- International Organization for Standardization (ISO) 3008
- International Panel on Climate Change (IPCC) 8894
- international plant protection convention 2314
- international polar year (IPY) 292
- international pyrheliometer comparison (IPC) 9677
- International Satellite Cloud Climatology Project (ISCCP) 8910, 10629
- International Telecommunication Union (ITU) 3008
- International Theronuclear Experimental Reactor (ITER) Joint Project 7162
- International Trachoma Initiative (ITI) 12013
- international transboundary breeds (ITB) 7974
- International Waste Generation Comparison Rates 8772
- Internet-accessible materials exchanges 8792
- internet 4502–4503
  - science education 4503
- interoception 12297
- interpenetrating networks (IPNs) 6897
- interplanetary field (IMF) 9477
- interplanting crop 156
- interplate 3237
- intersection 3083, 3091, 3095
  - after curves 3095
  - control systems 2476
  - road structures 3091
- interspecific density dependence 10065
- intertropical convergence zone (ITCZ) 6742, 9634, 9646
- inter-vehicle distances 2467
- intracellular calcium homeostasis 9654
- intracellular signaling pathways 3589
- intracytoplasmic sperm injection (ICSI) 10817, 10819, 10906
- intragemics 4497
- intraguild predation 10067
- intra-scene dynamic range 11106
- intraspecific density dependence 10065
- introgression library line (ILL) 6433
- introgression 477
  - of transgenes into wild populations 10801
- intron trap 7223
- intrusion 1918
- inulin 1115
- invasion
  - biology 10078–10079
  - ecology 5548, 5556
- invasive species 5547, 5549–5551, 5554–5556
- biological control 5556
- colonization pressure 5549
- ecological impacts 5551
- eradication 5555
- factors affecting establishment success 5550
- maintenance control 5556
- management of invasions 5554
- niche breadth-invasion success hypothesis 5550
- prevention 5555
- propagule pressure 5549
- risk assessment 5554
- socioeconomic impacts 5554
- invasive treatment 7999
- in-vehicle information systems (IVIS) 3124
- in-vehicle navigation 3082–3083, 11457
- inverse electrolysis 3929
- inverse gas, turbine 1411, 1420
- invertebrate 9165, 10087
  - sentinels 9165
- inverted roof 4702
- inverted terminal repeat regions (ITR) 10903
- investigational new animal drug (INAD) 3565
- investment tax credit (ITC) 12262
- involuntary smoking 3632
- iodine 1686, 1689, 4209, 8393, 8484, 8622
  - deficiency 1686
  - fortification of salt 1689
  - iodine oxide 119
  - toxicity 1686
- iodobenzene diacetate (IBD) 4646
- ion/ionic
  - association theory 4097
  - conduction 3878
  - conductivity 742, 2949, 2951, 3892, 3896
  - correlation 6047
    - molecular dynamics simulation 6047
  - diffusion 3439
  - dynamic correlation 6048
  - exchange 4588
  - liquid 970, 3936, 3939, 4647, 4648, 6085, 10177
    - chemical reactions 10177
    - electrolytes 6054
    - MW-assisted synthesis 4647
    - solvent-free synthesis 4648
    - synthetic application 4648
    - transfer 742
    - transport protein 5

- liquid-based electrolyte (ILE) 6060, 6063
  - solid salt 3939
  - stress 5317
  - tolerance 5319
    - exclusion 5319
    - tissue tolerance 5319
  - ion-aerosol clear-air mechanism 9810
  - ion-exchange membrane 8719
  - ion-exchange reactions 4098
  - ionization chamber 5562, 5563
  - ionizing radiation 3023, 3629, 3644, 4907–4908, 5560, 5562, 5572, 5574, 5578, 5581–5582, 8433, 8537, 8560–8562, 8587, 9661, 11041
    - adaptive response 5578
    - assessment of the environment 8433
    - chromatid aberrations 5581
    - dose fractionation 5578
    - dosimetry 3023
    - environmental protection 5582
    - gas-filled detectors 5562
    - low dose exposure 5578
    - on nonhuman biota 5572
    - origins 8562
    - repair of DNA 5581
    - single- and double-strand breaks (DSBs) 5581
    - sources 8560, 8587
    - tritium beta particle 11041
  - ionizing radioactivity 8426
  - ionomer 7760, 8332, 8344, 8337
    - chemical modification 8337
    - degradation 6543
    - ion transport 7760
    - membranes 6557, 6559–6560
      - inorganic nanoparticles 6560
      - superacid-containing 6559
    - water transport 7760
  - iopromide 11923
  - iridium oxide nanoparticles 7611
  - iron 612, 1685, 1689, 1713, 6379–6380
    - acetate 8285
    - biogeochemical cycle 6379
    - catalysts 2245, 3975
    - concentration 9577
    - deficiency 1685
    - fertilization 2117, 4113, 6380
    - fortification 1689
    - hydrogenase 5180, 5187
      - multicomponent systems 5187
    - in ocean surface waters 6379
    - nitrate 721
    - oxalate 8285
    - phthalocyanine 8273, 8277
      - source 9577
    - stoves 1362
    - sulfide 8352
    - toxicity 1685
    - uptake 1713
  - iron-III fluoride 6088
  - iron-lift configuration 6289
  - iron-nickel battery system 6940
  - iron-stimulated bloom 7274
  - irradiance 7906, 9755
    - distributions 9751
    - geometry 7922
    - long-term variability 9755
    - maps 9750
      - satellite-based 9750
    - reflectance 8957
  - irradiation tests 4068
  - irradiator 8523, 8524
  - irrigated agriculture 5620–5623, 5627, 5631, 9324
    - control of salinity 5621, 5623, 5627
    - economic viability 5622
    - efficiency of water use 5631
    - quality of return flows 5627
  - irrigated crop production 5624
    - optimal use of rainfall 5624
    - soil water storage 5624
  - irrigation 2790, 5620–5626, 5628–5631
    - advisory services 5629
    - decision support systems 5628
    - efficiency 5622
    - food production 5620
    - groundwater use 5630
    - management 5619, 5622, 5625, 9321
      - for efficient crop production 5619
      - improvement of sustainability 5622
      - plant water sensors 5625
      - under water scarcity 5629
    - methods 5623
    - networks 5631
    - on demand 5625
    - pressurized systems 5626
    - process 5621
    - scheduling 5626, 5628, 9323
    - simulation models 5628
    - sustainability 5620
    - systems 2324
    - timing 5626
    - uniformity of water distribution 5626
    - water 5621
      - requirements 5624
  - ischemic heart disease 213
  - isentrope 616–617, 6817
  - isentropic enthalpy 4274
  - isentropic turbine 4257, 4262
    - efficiency 4262
  - island
    - biogeography 947, 5775, 11328
    - networks 10937
  - iSNR hole 11113
  - iso*-butanol 5466, 5469, 5482
  - isoflavene 8135
  - isomeric transition 8564
  - isomerization 2246
  - isoniazid 11139
  - iso*-octane 5469, 5478, 5516
  - isoparaffin 3979
  - isopentenyltransferase 10750
  - isoprene 3225, 8897
  - isoprenoid 502, 6522
    - biosynthesis inhibition 502
  - isoseismic map 2428
  - isotherm 6817
  - isothiocyanate 3613
  - isotope/isotopic 3286, 3788, 3789, 3792, 8468, 8599
    - activity ratios 8413
    - dilution mass spectrometers (IDMS) 7206
    - fractionation 5229
    - of plutonium 3789
    - separation 5634–5635, 5637, 5639–5641
      - cascade theory 5637
      - countercurrent recycle cascade 5639
      - factor 5635
      - ideal cascade 5639
      - McCabe–Thiele diagram 5640
      - potential 5641
      - separative work unit 5641
      - shift 5642
  - iteration 440
  - iterative closest point algorithm (ICP) 10608
- ## J
- Jahn–Teller effect 714, 717, 726
    - distortion of the  $\text{Mn}^{3+}$  ion 726
    - $\text{Mn}^{3+}$  ions 714
  - JANAF thermochemical table 5515
  - Janzen–Connell hypothesis 10078
  - Japanese recycling law 4010
  - Jarvis-type stomatal resistance 3217
  - Jatropha* 2632
    - *curcas* 922, 925
    - oil 8087
  - jellyfish 12047
  - Jersey barrier 3073, 3074

- Jerusalem artichoke 1115
  - jet 10976, 10980, 10984, 10987, 10990
    - coflow 10984
    - crossflow 10987
    - deflection 10987
    - effect of boundaries 10980
    - engine 6260
    - exhaust condensation trail 659
    - fuel 11430
    - velocity 10990
  - JFE process 4001–4003
    - commercial operation experience 4003
    - direct melting 4003
  - johnsongrass 10346, 10349
  - JoinMap 6698
  - Joint Global Ocean Flux Study (JGOFS) 6383
  - joint regression analysis 4080
  - jorumycin 3161
  - joule heating 776
  - joule-heated ceramic melter (JHCM) 11585
  - jumping genes 10830
  - K**
  - kahalalide 3160
  - Kalina cycle 4296, 4318–4319
    - process 1267
  - Kalman filter 50–51, 57, 700, 3054, 3058, 3065, 3078, 11189
    - algorithms 3059, 11194
    - unscented 57
  - kanamycin 11140
  - kaolinite 8622
  - Kaposi's sarcoma 3644, 4999
  - Karenia brevis* 4824–4826
    - description 4824
    - detection 4825
    - economics 4825
    - nutrient interactions 4826
    - origins 4826
    - toxicity 4825
  - karlotoxin 9086
  - Karman's constant 11267
  - Karolinska sleepiness scale (KSS) 3117
  - karst 2798, 5646, 5648–5650, 5654, 5658, 5661, 5664–5665, 5669
    - aquifer 2798, 5669
    - areas 5649–5650, 5652, 5658, 5666
      - by transportation facilities 5658
    - cave development 5649
    - filtration system 5666
    - untreated ditches 5652
  - character 5649
  - dye tracing 5664
  - features 5649, 5653
    - drainage issues 5653
    - flooding of highways 5653
  - geohazard study 5661, 5665
  - geotechnical information 5658
  - groundwater 5646, 5654
  - haystack-type 5646
  - human modification 5646
  - map 5660
  - problems 5648
  - sinkholes 5650
  - soils 7686
    - oocyst transport 7686
  - terrane 5645, 5649
    - issues 5645
    - transportation issues 5645, 5649
- karst-related drainage 5666
- karst-related subsidence 5655
  - remedial treatment techniques 5655
- karyoplast 6150
- Kasalath allele 2698
- Kashin–Beck disease 1686
- katabatic winds 11299
- K-band ranging system 4567
- Keeling curve 9703
- Keggin ion 4596
- kelp 544, 550
- Kelvin
  - effect 134
  - equation 117
- keratinocyte 3611
- kernel E-factor 4629
- kerogen 7459–7465, 7469–7470, 7474–7476
  - changes in the macromolecular structure 7476
  - composition 7462
  - decomposition 7470, 7476
    - kinetics 7476
    - mechanisms 7476
    - rates 7469
  - degradative analysis 7464
  - functionalities 7464
  - isolation 7463
  - macromolecular structure 7462
  - nondestructive analysis 7465
  - pyrolysis 7475
    - pyrolytic behavior 7464
- kerosene 658, 666, 1218, 1302, 3978, 7446, 11430
- Keshan disease 1686
- ketone 3945, 11451
  - CO<sub>2</sub>-expanded 3945
- keyhole limpet hemocyanin (KLH) 8066
- key-population 947
- keystone
  - predation 10081
  - predator 10072, 10073
  - species 3300, 3302–3303
    - ecosystem engineering 3302
    - usefulness for management 3303
- K-fuel 2217, 2218
- Köhler curve 132
- kiln dust 11702
- kimberlite 1924
- kinematic viscosity 2048
- kinetic energy 3788, 3790, 3793, 3799, 8562, 8849, 10543–10544, 10619, 11489, 12204
  - flux density 10619
  - from the wind 12204
- kinetic hydrate inhibitor (KHI) 344
- kinetic nucleation 119
- kinetic occlusion 3146
  - information 3147
  - age-related decrements 3147
- Kirchhoff's law 9417
  - circuit law 6146
  - current law 39
  - voltage law 39
- kitchen
  - conditions 1310
  - stove 1364
- klarite 5393
- Kölbel–Schulze methodology 1055
- Klebsiella* 6324
- klinotaxis 12298
- K-metasomatism 5218
- knight shift 6081, 6091
- knockin 10902
- Knoevenagel reaction 4608
- knowledge
  - accumulation 4502
  - deficit model 10881
- Knudsen
  - diffusion 2024
  - flow 2921
- Koi herpesvirus 1940
- Kolmogorov complexity 3120
- Komatsu mining truck 5102
- Kona Blue Water Farm 3558–3560, 3562, 3564, 3567, 3570–3572, 3574
  - benthic impacts 3562
  - biofouling on the farm structures 3564
  - cultural resources 3572
  - environmental concerns 3560
  - farm operations 3558–3559
  - fish meal 3574
  - fish oil usage 3574



- marine mammal monitoring plan (MMMP) 3570
  - offshore farm site 3558
  - pest management strategy 3564
  - recreational use impacts 3571
  - shark management plan 3567
  - viewplane aesthetics 3572
  - water quality 3562
  - wildlife interactions 3567
  - Kosambi mapping function 479
  - Koutecky–Levich equation 7750
  - Kozeny–Carmen equation 4187
  - KPT (kitchen performance test) 1306
  - kraft lignin 6928
  - Kröger–Vink notation 2941, 3898
  - kriging 197
    - of differences 9754
  - Kronecker delta 3811
  - krypton 8484, 8583
  - K-shell electron 8564
  - Kyoto protocol 515, 654, 664, 3858
  - Kyshtym accident 5592, 5601
- L**
- La Niña event 2126, 2130
  - laboratory car 3061–3062
    - dynamic link library 3062
    - estimation process algorithm 3062
    - test conditions 3061
  - Lachnospiraceae* 6327
  - lactation 1777
  - lactic acid fermentation 1131
  - lactobacilli 994
  - lactoferrin 10874, 10900
  - lactose 10855
  - lacustrine
    - biology 291
    - deposits 11620
  - lacZ* gene 2589
  - lagoon 2491
  - Lagrange equation 11463
  - Lagrangian
    - coordinate system 2034
    - derivative 2765
    - trajectory analysis 8672–8673
    - trajectory model 261
  - lahar 11642
    - flows 8942
  - lake 5673, 5674, 5676, 5678–5681, 5683–5685, 5688–5690, 5692–5698, 5700
    - acid rain 5678
    - aging process 5673
    - atmospheric input 5678
    - biological processes 5679
    - biology 5676
    - biomanipulation 5700
    - bottom 5689
      - diffusive oxygen flux 5689
    - chemical kinetics 5680
    - chemistry 5676
    - density- or wind-driven currents 5683
    - dissolved oxygen 5693
    - eutrophication 5673, 5681, 5684
    - external material inputs 5676
    - geometry ratios 5682, 5698
    - hydraulic residence time 5680
    - hypolimnia 5698
    - ice 291
    - ice-cover model 5684
    - internal nutrient loading 5679
    - lethal temperature (LT) isotherm 5695
    - liming 7046
    - management 5700
    - manipulation of water quality 5680
    - model simulations 5692
    - nutrients from watersheds 5678
    - particle settling 5678
    - phytoplankton concentration 5689
    - radiation attenuation 5690
    - resuspension 5678
    - sediment 5680, 5686
      - air bubble plume 5680
      - heat fluxes 5686
    - simulation
      - of Cisco habitat 5694, 5696
      - of water quality 5683
    - stratification 5681
    - sustainability 5674
    - sustainable cold-water fish habitat 5697
    - sustaining fish habitat 5692
    - vertical mixing 5681
    - water temperature 5685, 5693
    - year-round dissolved oxygen model 5688
    - year-round water temperature 5684
  - Lamb wave 12066, 12068
  - Lambertian scattering 7919
  - Lambert's cosine law 9676
  - Laminaria* 9122
  - land 1506, 1555
    - abandonment 10371
    - allocations 5410
    - availability for energy crop production 1506
    - consumption 5787–5789, 5791, 5793–5795, 5799–5800, 5804, 5807–5809
      - compensation systems 5804
      - drivers 5791
      - minimization 5808, 5809
    - models 5793
    - motorized transport demand 5799
    - policy responses 5800
    - spatial planning 5799, 5807, 5809
    - supply-driven factors 5794
    - systematization 5795
    - undesirable effects 5788, 5795
    - unintended social outcomes 5799
  - cover change 5778
  - degradation 1555
  - disposal 5706, 5709
    - finding sites 5709
    - of solid waste 5709
  - efficiency 1504
  - ice 2766
  - management 1511, 3279, 4677
    - successional recovery 3279
  - mosaic 10369
  - subsidence 5712–5713, 5715–5718
    - causes 5713
    - economics 5718
    - environmental Effects 5717
    - fluid withdrawal 5716
    - geology study 5715
    - groundwater extraction 5715
    - hydrogeology 5715
    - in urban environment 5712
    - monitoring 5718
    - problems 5713
    - properties of the soils 5715
    - properties variation in time 5716
    - solid extraction 5717
    - tunneling 5717
    - underground construction 5717
  - treatment 1635
  - land surface 3212–3213, 9636
    - catchments 8700
    - model 3212–3217, 3219–3220, 3222
      - bucket models 3213, 3220
      - bulk-layer models 3219
      - force-restore method 3217
      - Monin-Obukhov similarity theory 3216
      - net shortwave radiation 3215
      - Stefan-Boltzmann constant 3216
      - subgrid heterogeneity 3214
      - surface data 3214
      - topography-based runoff models 3222
      - variable infiltration capacity (VIC) model 3214
    - warming 204
  - land use 1550, 3553, 5778, 5787, 5793–5795, 5800–5801, 5803–5805, 5807, 5820–5821,

- 5825–5826, 5836, 5839–5840, 5847, 5849, 10264, 10294, 10923
  - and land cover (LULC) 5827
  - carbon-and-nitrogen-dynamics models (CANDY) 5826
  - catchment models 5825
  - change 1497, 1498, 1501, 1502, 1560, 5825
    - satellite data 1502
  - comprehensive planning 5800
  - controlling factor for water and nutrient dynamics 5825
  - decentralized governance 5794
  - eco-hydrological models 5820
  - effect on hydrological cycle 5821
  - efficiency 1504
  - environmental problems 5820
  - evapotranspiration 5849
  - global dimension 5787
  - governance 5794
  - impacts 5795
  - management 1550, 3207
  - natural processes 5820
  - negative planning 5803, 5807
  - perforation 5839–5840, 5847
  - planning 1561, 3553, 4677, 5801, 5805, 5818, 10264, 11344
    - analysis system (LUPAS) 9327
    - blue-print-planning 5805
    - legally binding 5801
    - legislation 5803
    - persuasion 5805
    - regulations 5803
    - sequential test 5805
    - water resources management 5818
  - positive planning 5803
  - public planning 5801
  - runoff generation model 5826
  - sector-specific planning 5800
  - spatial planning 5805, 5807, 5836
  - sustainability 5820, 10294
  - tradable permit schemes 5804
  - whole-farm simulation model 5826
  - zoning 5793
- land-atmosphere interaction 8911
- land-based culture 1935
- land-consuming human activity 5791
- land-water storage 2459
- landfarming 1632, 2444
- landfill/landfilling 4765, 4772, 4799, 4904, 5709–5711, 5720–5721, 5723, 5732–5734, 5736–5739, 5743, 5745, 5747, 5749–5753, 5755, 5757, 5760–5763, 5910, 5918, 5928, 5930, 5932, 8773, 9984–9987, 9992, 9996, 9999, 10003, 10581, 10584, 11585, 11665, 11675, 11697, 11747, 11828, 11834, 11835, 11852
  - bioreactor 5720–5724, 5726–5730, 5763
    - aerobic 5723
    - alternative daily cover materials (ADCs) 5728
    - anaerobic 5723
    - biocell 5723, 5730
    - biochemical oxygen demand (BOD) 5722
    - cell configuration 5724
    - final cover 5728
    - gas collection systems 5727
    - gas production 5728, 5730
    - historical evolution 5721
    - horizontal infiltration trenches 5726
    - hybrid 5723, 5730
    - infiltration ponds 5726
    - leachate management 5724
    - pre-wetting of waste 5727
    - spray infiltrators 5727
    - types 5722
    - uneven moisture distw Wells 5726
    - waste degradation 5728
    - waste settlement 5729
  - cell capacity 5711
  - cell construction sequence 5711
  - classification 5750
  - closure 5732–5733, 5736–5738
  - compacted clay liners (CCL) 5752
  - controls 9992
  - covers 5755
  - design 5710, 5749
  - directive 11684
  - disposal 5733
    - program flexibility act 10019
  - diversion 11674
  - drainage layers 5753
  - dry-tomb 5721
  - emissions 11697
    - factors 5932
  - external costs 4799
  - facility property 5739
  - finding sites 5709
  - flexible membrane liners (FML) 5752
  - gas (LFG) 4767, 5722, 11835
    - collection 5910, 11690
    - gas to energy (LFGTE) 5910, 5918
  - gas 5743, 9986
    - capture for energy recovery 11675
    - collection efficiency 5932
    - energy 5745
    - management 5723
  - geological mapping 5751
  - geomembranes 5752
    - geosynthetic clay liners (GCL) 5750, 5752
  - greenhouse gas emissions (GHG) 9987
  - groundwater composition 5751
  - leachate 5720, 5755
    - collection system 9985
    - containment 5711
    - control 5747, 5751, 5763
    - disposal 5761
    - management 5723
    - monitoring 5757, 5762
    - treatment 5760
  - life cycle inventory 5928
  - liners 5752
  - monitoring 5757
  - of untreated ash 11747
  - post-closure
    - control 5761
    - development 5745
    - plan 5736
    - requirements 5734
  - reuse 5737–5740, 5746
    - economics 5740
    - infrastructure 5739
    - master plan 5738
    - of land 5732
    - permitting 5738
    - sustainability 5740
  - runoff/infiltration control 5757
  - semi-aerobic 9992
  - simulators 10003
  - sites 5733
    - selection 5751
    - sustainable reuse 5733
  - SO<sub>2</sub> emissions 5930
  - sustainability 5741–5742
    - economic aspects 5742
    - environmental aspects 5741
    - gases 5741
    - sociopolitical aspects 5742
  - total LCI emissions 5918
  - viability for reuse 5737
  - waste input management 5749
- landscape 3329, 3359, 5772–5774, 5777–5778, 5780, 5783, 5808, 5818–5821, 5830, 5835, 10356, 10358–10359, 10363, 10367–10368, 10371–10372, 10375–10378, 10380–10381, 11876
  - aesthetic quality 10368
  - aesthetic value 10371
  - architecture 10367
  - as art 10376
  - assessment 10372
  - balance 5820

- change 10382, 10384
  - monitoring 10382
  - quality of life 10384
- character 10372
  - assessment (LCA) 10372
- complexity 5778
- components 5774
- conservation 5783
- cultural heritage 10376
- definition 10367
- designs 11332
- diversity 10363
- ecology 947, 3298, 3359, 5772–5775, 5777, 5780, 5783, 5819
  - accuracy assessment 5783
  - data acquisition 5783
  - definition 5774, 5775
  - European perspective 5773
  - evolving concepts 5775
  - goal 5777
  - nature–society interactions 5783
  - North American perspective 5773
  - research topics 5777
  - spatial heterogeneity 5775
  - spatial scaling 5780
- extensive agricultural use 10356
- functions 5821
- human-dominated 5778
- human-scale 5774
- irrigation 11876
- management residues 1176
- mosaics 5777
- pattern
  - analysis 5780
  - optimization 5783
- planning 5830, 5835, 5785, 5817, 10358, 10372
  - for minimizing land consumption 5785
  - for sustainable water usage 5817
- preservation 5808
- project 10386
- quality interaction 12245
- sensitivity 10378
- shrinking 5835
- spatial signature 3329
- structure 5818
- sustainability 5783, 10356, 10359, 10377, 12293
- sustainable water use 5830
- time 10375
- value 10378
- visual capacity 10381
- visual impact assessment 10380
  - visual sensitivity 10380
  - water balance 5819
- landslide 3248, 3553
- land-surface hydrology model (LSM) 4570, 4573, 4575
- lane departure warning (LDW) 71
- lane-keeping assist (LKA) 3068
- lane-tracking system 3126
- Langevin recombination rate 7561
- Langley plot technique 9714
- Langmuir
  - adsorption 9574
  - isotherm 8612, 8618
- Langmuir–Hinshelwood mechanism 9572
- lanthanide 2944, 3902, 7889, 8621
- lanthanum 9860, 9949
  - chromate 2946–2947, 2949, 2951
  - catalysis 2949
  - conductivity 2947
  - stability 2951
  - chromites 9853
  - ferrites 3907
  - manganite-based cathode 9860
  - chromium poisoning 9860
  - strontium manganite (LSM) 9853, 9872, 9955, 9963
- lantibiotics 504
- Laplace field 11163
- Laplace transform 10972
- Laplace equation 4570
- large eddy simulation (LES) 11278
- large Hadron collider (LHC) 6242, 6253
- large offspring syndrome (LOS) 6157, 10819
- large-scale combustion plants 1313
- Larix* spp. 3292
- Larmor time scale 6081
- laser
  - atmospheric sensing experiment (LASE) 317
  - fluorosensor 7501, 7519
  - in-space technology experiment (LITE) 320
  - isotope separation (LIS) 5642
  - measurements 3197
    - geo-referencing 3197
  - range finder (LIDAR) 11457
  - scanner 70, 75, 3176, 3179–3180, 3185
    - horizontal matching 3179
    - LIDAR 3176
    - mirror range 3180
    - segmentation 3185
    - vertical matching 3179
  - ultrasonic remote sensing of oil thickness (LURSOT) sensor 7513
- laser-induced breakdown spectroscopy (LIBS) 8817
- LASSO methodology 432
- late blight 2578, 2701
- latent heat energy storage 10565
- latent heat storage 10557
- lateral tire forces 3056
- laterite 1918
  - nickel 9953
- lattice nitrogen 6771
- Laurentide ice sheet 2770
- lava flow 11615, 11620, 11641
- Lavoisier mass balance 9138
- law
  - of blackbody radiation 9417
  - of diminishing returns 2991
  - of mass conservation 5249
  - of thermodynamics 6815, 6816, 10001, 11852
- Lawesson's reagent 4645
- leachate 5724–5726, 5748–5750, 5757–5758, 5760–5763
  - composition 5749
  - containment 5711
  - contamination 5748
  - controlling 5749
  - control 5762
  - disposal requirements 5761
  - management 5723
  - measuring 5757
  - monitoring 5750, 5758
  - production rate 5725
  - quality 5763
  - recirculation 5724–5726
  - sampling 5757
  - treatment methods 5760
- lead 172, 189, 235, 773, 3630, 4055, 4890, 8462, 8481, 10409, 10648, 10650, 10654
  - alloys 5885
  - batteries 10649
  - dioxide 773
  - exposure 3260
    - low-dose effects 3260
  - grids 5885
  - health effects 10650
  - intoxication 3591, 10650
  - lead-210 3715
    - annual fallout 3715
    - from volcanic eruptions 3715
  - poisoning 10649
  - production 10404
  - sulfide 10648
- lead-acid battery 674, 685, 699, 706, 749, 771, 773, 774, 776, 777, 3478, 3483,

- 5881–5883, 5887, 8746, 8749, 10404, 11503, 11511, 11512
  - advanced 774
  - by construction 774
  - by electrode material 774
  - circuit model 777
  - commercial designs 5882
  - cost 776
  - electrodes 5887
  - flooded 774
  - for sustainable energy 5881
  - gravity measurement 699
  - hybrid electric vehicle 5883
  - markets 5882
  - recycling 10404
  - separators 8746
  - uninterruptible power systems (UPS) 5882
  - valve-regulated 774, 11512
  - vented 774
- lead-antimony battery 774
- lead-based paint 10651
- lead-battery electrode 5885
- lead–bismuth 4055
- lead-calcium battery 774
- lead-contaminated dust 10651
- lead-cooled fast reactor 4055
- leaded gasoline 10649
- leaf 2630
  - area index (LAI) 2667
    - measurements 7921
    - values 10038
  - area ratio (LAR) 2668, 2670, 2672
  - color chart (LCC) 2670
  - elongation rate (LER) 2672
  - nitrogen 2632
  - photosynthesis 2632, 2672
  - photosynthetic capacity 2626, 2630
- leaf-electrolyte-leakage 10396, 10398
- leaking water 11941
- lean construction 10305
- lean design 10305, 10311
- lean production 10304, 10306
  - integrated delivery processes 10306
- lean tissue growth rate (LTGR) 7987
- LEA-type protein 5
- Leclanché cell 747
- lectin 4033, 4034, 4828
  - insecticidal activity 4033
  - toxicity 4033, 4034
- legacy 6229
  - training 6229
- Legendre polynomial 469, 3811
- Leghorn hen 392
- Legionnaires' disease 7385
- legume lectin 4031
- LemnaTec 10
- lentic waterbody 5676
- lentiviral vector 644, 10904, 10919
- lentivirus 5000, 10826
- Leontief's input–output methodology 3308
- lepidopteran 4030, 4033, 4035, 4038
  - pests 4038
- lepidoptera 4016
- lettuce 1709
- Leucena* 1290
- leukemia 3603, 3644
  - of the blood 302
  - radiation-related 3644
- levelized electricity generation cost (LEC) 1265
- Levenberg–Marquardt algorithm 10606, 11464
- Lewis acid 4605, 4591, 4603, 4606
  - aluminum chloride 4606
  - in acylation 4606
- Lewis–Whitman laws 9137
- LFP 713
- Li-air battery 703
- lichen–caribou food chain 8461
- lid tank shielding facility (LTSF) 8539
- LIDAR, see also light detection and ranging 322, 3172, 6592, 6594, 11459
  - calibration 11464
  - computer vision calibration 11459
  - coordinates 11462
  - equation 312
  - range gating 6592
  - sensors 5460, 11456–11457
  - space-based 322
  - technology 310, 6589
- life cycle
  - analysis (LCA) 4856
    - life cycle impact assessment tools 4856
  - assessment (LCA) 196, 1594, 1597, 3453, 5893, 5895, 5909, 5910
    - aquaculture production systems 5893
    - ecologically based 3453
    - economic input-output 3453
    - history 5895
    - software tools 5895
    - solid waste management (SWM) 5910
  - hazard profile of a material 4851
  - impact assessment (LCIA) 1597, 5896
  - inventory 5910, 5925, 9435
    - analysis (LCI) 1597, 5896
    - emission factors 5925
- life-enhancing device 6499
- life-sustaining device 6499
- Li-Fraumeni cancer family syndrome 3609
- light 2876, 2885
  - capture 2663
  - contaminants removal 8805
  - detection and ranging (LIDAR) 8958, 8970
  - direction ceiling 2876
  - distribution 2886
  - energy 349, 1478
    - conversion into chemically bound energy 1478
    - flows 2885
  - harvesting 352, 2623, 2663, 6571, 6573, 6578
    - by advanced 6578
    - complexes 2624
  - infrastructure rapid transit 5985
  - light-to-biomass conversion 355
  - meters 2830
  - non-aqueous phase liquids 4795
  - oils 7844
  - pipe 2811, 2840
  - reactions 1479
  - redirection
    - ceilings 2876
    - systems 2867
  - shelf 2811
  - sources 11105
    - spectral distribution 11105
  - to solar gain ratio (LSGR) 2887
  - transmission 2840, 2850
  - treatments 2856
  - tube 2811
  - water reactor (LWR) 4063, 7095
  - well 2811
- light rail
  - investments 6016
  - lines 1886
    - carrying capacity 1886
  - revolution 5982
  - transit (LRT) 1810, 1812, 1814, 1817, 1840, 1854, 1865, 1868–1870, 1881, 1891, 5934–5936, 5939–5940, 5950–5952, 5955, 5957–5959, 5961–5964, 5966, 5968, 5971, 5974–5976, 5989, 5997, 6005, 6010, 6013–6014, 6016, 6497
    - adoption in North America 5989
    - applications 1868
    - capital investment 6005
    - characteristics 1869
    - collision safety 5955
    - commingled operation 5963, 5968

- control and communication systems 5959
- crossing warning sign 5940
- current operating scenarios 5961
- definition 5955, 5974
- developments 1814, 1865
- high-floor vehicles 5962
- historical background 5952, 5976
- innovations 5976
- insurance 5963
- intra-suburban transit usage 5975
- investments 5997
- investments on land use patterns 6013
- land use 6014
- liability insurance 5966
- liability issues 5963
- low-floor designs 5961
- network supplements 1814
- passenger-carrying capacity 5974
- pedestrian conflicts 5939
- pedestrians 5936
- platform access level 5961
- pollution reductions 6016
- right-of-way 5936, 5950, 5964
- risk assessment 5959
- soles and impacts 1870
- safety 5968
- scheduled speeds 5975
- shared corridor 5951
- shared infrastructural issues 5950
- shared right-of-way 5951
- shared track 5951
- shared-track operations 5958
- shared-track practice 5964
- shared-use operations 5957
- systemic viability 5971
- technology 1817
- traction power system 1817
- traffic density 6010
- viability 5975
- vehicle (LRV) 5935, 5937–5938, 5942, 5945, 5952, 5955
  - collisions with pedestrians 5938
  - motor vehicle collision 5937
  - pedestrian-LRV crossings 5942
  - positive control devices 5945
- light-beam induced current (LBIC) 9214
- light-emitting diodes (LEDs) 7908
- light-sensitive photodiode 11109
- lighting 2841, 2880, 10290
  - control models 2841
  - design 2880
  - power densities (LPDs) 2842
  - simulation programs 2821
  - sustainability 10290
- lignin 964–965, 1042, 1075–1076, 1105, 1519, 6020, 9824–9825, 10752, 11437
- lignite 1084, 2171, 2177–2178, 2183, 2272, 4399, 4770
  - combustion 1084
  - resources 2183
- lignocellulose/lignocellulosic 1043, 1485, 1494, 6020, 11437, 11450, 11453
  - biomass 1234, 1273, 1562, 1579, 6027, 8048
  - from perennial grasses 6027
  - resources 1534
  - crops 1609, 6029
  - energy crops 1565, 6019
  - ethanol 983, 1053, 1064, 11450
  - fuels 9836
  - material 962, 972, 1518
  - substrate 988
- lignocellulose-to-ethanol process 966
- Li-ion battery, see also lithium-ion battery 709, 713, 7548, 8253, 9293
  - configuration 713
  - silicon-based anodes 9293
- Li-ion capacitor (LIC) 3441
- lime 1383, 7046
  - kilns 5286
- limestone 1383, 1913, 5646, 8360
  - reservoir rock 7802
- limnology 5674
- limonium 2626
- linalool 4036
- Lindal diagram 4355, 4363
- lindane 3631, 10664
- linear concentrating collector 6031
- linear energy transfer (LET) 11044
- linear Fresnel collector 6031–6032, 6035–6037
  - benefits 6036
  - disadvantages 6036
  - main features 6036
  - receiver design 6035
  - target markets 6037
- linear Fresnel reflector 6033, 6034–6035
  - design 6033
  - optical losses 6035
  - reference area 6035
- linear induction motor (LIM) 6260
- linear isotherm 8613, 8618
  - equation 8611
- linear non-threshold radiation response 3258
- linear partitioning coefficient 8612
- linear synchronous motor (LSM) 6260
  - propulsion system 6273
- lineshaft pump system 4367
- linkage
  - disequilibrium (LD) 481, 487, 489, 7979
  - drag 6428
- Linke turbidity coefficient 10629, 10632
- Liouville equation 3817
- lipases 929
- lipid
  - biosynthesis 360
  - hydroperoxides 3663
  - metabolism 6
  - peroxidation 3662–3664
  - chain reactions 3664
  - transfer proteins (LTPs) 10698
- lipidomics 1193
- lipophilic
  - pesticides 3275
  - toxins 3593
- lipopolysaccharide 4832
- liquefaction 989, 991, 2224, 3250, 3959, 3997
- liquefied
  - fuels 5469, 5482
  - natural gas (LNG) 1622, 3957, 3959–3960, 5462, 5468, 5470, 5484, 6847, 7448
  - refrigeration system 3960
  - thermal efficiency 3959
  - petroleum gas (LPG) 268, 2223, 5462, 5468, 5470, 5482, 5484
  - refrigerant 9522
- liquid aluminum 8779
- liquid 2028, 6917
  - biofuels 1414, 1543, 1562, 1563, 1608, 8083, 8978, 10527
  - biomass 1416
  - chromatography 11916
  - desiccant 9558
  - air-conditioning (LDAC) systems 9515
  - electrolyte 741, 6068, 6131, 7878, 8716
  - separators 8716
  - energy storage 10569
  - fertilizer 3771–3772
  - for combined heat and power (CHP) 8978
  - fuels 1267, 5469, 11430
  - electricity generation 1267
  - hydrogen 7299
  - kinematic viscosity 2028
  - natural gas (LNG) 1881
  - phase dimethyl ether process (LPDME<sup>TM</sup>) 2248

- phase methanol 2248
- polymers 3936
- solids contact (LSC) reactors 1632
- solvent extraction (LSE) 2224
- storage materials 10555, 10557
- surface tension 6917
- ternary aerosol (LTA) 130
- waste storage 8504
- working fluid 10565
  - direct storage 10565
- liquid-metal-cooled fast reactors 4062
- LISICON 762
- Listeria* 5058, 5064
  - in fish 9102
  - treatment 5064
- listeriosis 5058
- lithiated graphite 6068, 6091
- lithiation 716
- lithium 709, 712, 714, 716–717, 719–722, 725–726, 728–729, 748–749, 751, 753, 760, 764, 771, 785–786, 791, 4059, 6058–6059, 6084, 6086, 6089, 6634, 7540–7542, 7544, 9293–9294
  - anisotropic thermal vibrations 7541
  - anode 716, 749, 753
  - battery 703, 3473, 3481, 3499, 5883, 6037–6038, 6502, 8719
    - electrode/electrolyte interfaces 6038
    - electrolyte 6038
    - electrolyte stability 6037
    - medical devices 6502
    - power capability 3473
  - bis(oxalato)borate (LiBOB) 719, 9310
  - bromide 4375, 9517
  - cell technologies 6502
  - chloride 6505
  - cobalt oxide (LCO) 6142, 7548, 11519
  - composition 7532
  - compounds 6069
  - desolvation 6058–6059
  - electrochemical alloys 9294
  - $\text{FePO}_4$  722
  - fluoride (LiF) 6504
  - free-energy profile 6058
  - hexafluorophosphate ( $\text{LiPF}_6$ ) 786, 791
  - in nanoparticles 729
  - ion 6510
  - iron oxides 6089
  - iron phosphate ( $\text{LiFePO}_4$ ) 6060
  - $\text{LiFePO}_4$  721, 722, 725, 729, 764, 771
  - $\text{LiMnPO}_4/\text{MnPO}_4$  system 725
  - $\text{LiNiO}_2$  712
  - $\text{LiNi}_{0.5}\text{Mn}_{0.5}\text{O}_2$  714
  - $\text{LiNi}_{1/2}\text{Mn}_{3/2}\text{O}_4$  720
  - $\text{Li}_2\text{CoSiO}_4$  728
  - $\text{Li}_2\text{FeSiO}_4$  728
  - $\text{Li}_2\text{MnO}_3$  714
  - $\text{Li}_2\text{MnSiO}_4$  728
  - $\text{Li}_x\text{CoO}_2$  712
  - manganese
    - oxide ( $\text{LiMn}_2\text{O}_4$ ) 713, 791
    - spinels 719
  - maximum entropy method (MEM) 7542
  - metal oxides 6068
  - metal polymer batteries 11519
  - nanoparticulate  $\text{LiMnPO}_4$  725
  - neutron diffraction 7540
  - nickel oxide 6143
  - non-stoichiometry 722
  - nuclear distribution 7544
  - phosphates 726
  - phosphorus oxynitride 9310
  - polymers 786, 8742
    - Separator 8742
  - primary batteries 748
  - salts 751, 6046, 6069
  - shifts 6090
  - spinel framework 760
  - tetrafluoroborate ( $\text{LiBF}_4$ ) 6504
  - thionyl chloride 6504
  - titanate anode 6142
  - transference number 6084
  - transition metal-containing poly-anionic compounds 726
  - transport 6055, 6086
- lithium-air battery 766
- lithium-carbon monofluoride 6503
  - monofluoride-silver vanadium oxide 6510
- lithium-iodine 6502
- lithium-ion battery 707, 717, 727, 730, 768, 785–788, 790–791, 3428, 3429, 3857, 6060, 6067, 6068, 6069, 6097–6099, 6100, 6103, 6104–6106, 6108, 6109, 6111–6114, 6116–6118, 6119, 6122–6126, 6132, 6133, 6137–6138, 6141, 6145, 6146, 7528, 8720, 8739, 11519
  - abuse safety tests 6099, 6118
  - abuse tolerance 6117
  - anode 9299
    - decomposition reactions 6111
    - materials 6141
  - capacity fading (CF) 790
  - cell
    - balancing 6146
    - components 6126
    - level safety 6138
  - cell-operating voltage 6125
  - chemistry 785
  - commercial success 6124
  - cost 791
  - cylindrical cell 6116
  - dynamic stress test (DST) 788
  - efficiency 787
  - electrochemical reactions 6067
  - electrochemistry 6069
  - energy storage capability 6124
  - field-failures 6099, 6103, 6117
  - graphite-free 727
  - heat release 6100
  - history 6123
  - internal shorts 6119
    - circuits 6103
    - formation in a field-failure 6105
  - $\text{LiMn}_2\text{O}_4$  717
  - manufacturing
    - process 6133
    - quality 6104
  - market survey reports 6125
  - mechanisms of internal shorting 6106
  - prismatic cell 6116
  - reliability 788
  - safety 6097–6098, 6100, 6119, 6137
  - safety testing procedures 8739
    - development 8721
  - safe zone 6113
    - concept 6114
  - self-heating of the cell 6111
  - separators 6132, 6145, 8720, 8721
  - short initiation 6104
  - system level safety 6138
  - technology 6122
  - thermal runaway (TR) 790, 6099, 6138
    - from internal shorts 6108, 6109
  - threshold energy 6112
  - transportation applications 6119
  - working mechanism 6123
- lithium-ion capacitor (LIC) 3431
- lithium-ion cell 677, 6099, 6101, 6102, 6120, 6127, 6129, 6131, 6132, 6134–6135, 6137, 8716
  - autoignition 6101
  - cell balance 6131
  - cyclability 6129
  - exothermal reactions 6101
  - external abuses 6099
    - triggers 6102
  - fabrication process 6134
  - field-failures 6120
  - flat plate pouch configuration 6135
  - formation and aging 6137
  - hot box test 6102

- ideal electrolyte solute 6132
  - liquid electrolytes 6131
  - mechanism 6127
  - safety failures 6099
  - solid electrolyte interface (SEI) 6129
  - thermal runaway 6101, 6102, 6120
  - lithium-ion gel polymer batteries 8743
    - separator 8743
  - lithium-iron monosulfide 678
  - lithium-manganese dioxide 6508
  - lithium-silicon alloy 9294, 9296
  - lithium-silver vanadium oxide 6507
  - lithium-sulfur battery 765
  - lithostatic pressure 4128
  - litter 9990, 10009
  - liver damage 10641
  - livestock 1747, 1750, 1754, 1764, 1766, 1772, 1780, 1782, 2964, 9360, 10848, 10853, 10858, 10888, 10890
    - biodiversity 1772
    - breed 7974, 7979, 7984
      - improvement 7983
      - maintenance 7984
    - breeding 1764, 1766, 1779
    - development 407
      - objectives (LDOs) 407
      - strategies (LDS) 407
    - distribution 1747
    - domestication 1747
    - environmental footprint 10848
    - excreta 7986
    - fertility 10890
      - transgenic improvement 10890
    - for human food production 10853
    - for meat production 1754
    - genetic improvement 1782, 9359, 9360, 9364, 10853
    - genetic resource management 7979
    - genome 10828
    - infectious diseases 2964
    - industries 10887
      - sustainability 10887
    - poor management 10888
    - production 1757
      - disease 1757
    - productivity 1754
    - products for ensuring food security 1750
    - reproduction 1780
    - robustness 7991
    - somatic cell nuclear transfer 6149
    - species 8002
      - genetic adaptation 8002
    - survivability 1780
    - with enhanced health characteristics 10858
  - living building challenge (LBC) 8708
  - living modified organism (LMO) 2287
  - living nutrient bridge 8873
  - living ocean 6178, 6180
  - living planet index 940, 10088
  - living roof 4701, 4718
  - living wall 4714
  - Loa loa* 12010–12011
  - load Love number 4568
  - local breed 394
  - local bus route 1885
  - local material 9031
  - local meat production 1744
  - local traffic emission 263
  - localized hydrogen starvation 7766
  - location-allocation method 197
  - locomotive 5095
    - diesel engine–based 5095
    - propulsion system 5095
  - lodging 6204–6206, 6210–6211, 6213
    - anchorage failure moment 6205
    - base-bending moment 6205
    - crop management effects 6210
    - mechanisms 6204
    - models 6204
    - plant breeding 6210
    - plant growth regulators 6210
    - resistance 6202, 6211
    - risk 6206, 6208, 6210, 6213
      - methods for controlling 6208
    - stem failure moment 6206
  - logarithm of the Odds ratio 6430
  - logarithmic velocity profile 2054
  - London smog 143, 245
  - long-lived greenhouse gases (LLGHG) 145
  - long-range atmospheric transport (LRAT) 4884
  - long-term climate change 10081
  - long-term ecological research (LTER)
    - network 6216, 6222, 6224–6225, 6227–6230, 6234, 6236
      - achievements 6229
      - augmented LTER sites 6225
      - decadal plan 6236
      - education 6234
      - evaluation of LTER sites 6224
      - formal vision 6216
      - formation 6222
      - global positioning systems (GPS) 6224
      - governance structure 6227
      - information
        - dissemination 6228
        - management 6236
      - infrastructure 6230
      - legacies 6229
  - major milestones 6222
  - mission 6227
  - research 6230
    - programs 6222
- long-term intersite decomposition experiment team (LIDET) 6233
- longwave radiation 9741
- Lophelia pertusa* 6414, 6416
- Lorenz force equation 41
- Los Alamos Sea Ice model 2775
- loss-of-field relay 12089
- Lotic Intersite Nitrogen Experiment (LINX) 6233
- Lotka–Volterra competition equations 10065, 10075
- Lotka–Volterra equations 10065, 10068, 10075
- louver 2871, 2872, 2874, 2875
  - adjustability 2875
  - daylight-optimized 2872
  - light-redirecting 2874
  - sunlight-reflective 2871
  - W-shaped 2872
- low doses 3256
  - physiological response 3256
- low emission furnace 1397
- low emission zone (LEZs) 270
- low energy building 7642
- low NO<sub>x</sub> technology 6481
- low-ash fuel 1382
- low-cal house 7630
- low-carbon
  - economy 2756
  - energy sources 9697
- low-density lipoprotein (LDL) 1685
- low-dose effect 3262
- low-dose treatment 3256
  - adaptation 3256
  - compensation 3256
- low-earth orbit (LEO) 8471
- low-emission vehicle (LEV) 5025
- low-entropy material 11708
- low-frequency noise 12290
- low-input farming 155
- low-level radioactive waste (LLW) 8390, 8589, 8594, 8595
  - disposal 8595
- low-maintenance battery 5886
- low-tech biogas 1146, 1153, 1172
- low-temperature
  - carburization process (LTC) 1525
  - combustion (LTC) 5541
  - Fischer–Tropsch (LTFT) technology 2225
  - storage 10559



- low-volatility gas 113
- water gas shift (LTWGS) 2248
- lower heating value (LHV) 9936
- lowest observed adverse effects level (LOAEL) 3255, 3630
- loxP* sequence 10682
- luciferase (LUC) 2598
- lugworm 1921
- Lujo virus 5353
- Lumbrineris brevicirra* 3152
- luminaire 2827
  - potential glare effect 2827
- luminance 2832
  - range 11108
- luminance–chrominance color space 11122
- luminosity 9621
- luminous efficacy model 2826
- lump oil shale 7485
- lung 3639
  - cancer 213, 3609, 3612
  - development 3639
  - function 3642
- Lurgi methanol synthesis 3984
- luteinizing hormone 6154
- lux–flood acid-base theory 6723
- Lyapunov function 53
- lymphatic filariasis 12011
  - elimination program 12011
- lymphocyte 5577
- lymphoma 3603
- lyngbyatoxin-a 4832
- lysine 1693–1694
  - biosynthesis 1694
- lysostaphin 2967, 10858
- lyzozyme 10700, 10854

## M

- maar 11627
- Macbeth color checker chart 11121
- machine learning 6960
  - AdaBoost algorithm 6960
- MacMullin number 8726, 8730, 8733
- macroalgae 518, 553, 832, 1192, 2502, 4820, 6313, 7388, 9111
  - ponds 6313
- macroalgal culture 3581
- macrobenthos fauna 6416
- macrocycle 8272, 8274
  - carbon-supported 8274
- Macrocystis pyrifera* 362
- macro-environmental sensitivity 470
- macromineral 1682
- macromolecule 1105, 1213
- macronutrient 1677–1678, 1683, 1691, 3769, 7268, 7278

- deficiencies 1683
- disorders 1683
- in fertilizer 3769
- macroparasite 523
- macrophyte 11894, 11900
  - free-floating 11894
- macropore 855, 7681–7682
  - flow 7674
- mad cow disease 10859
- Madden Julian oscillation (MJO) 2144, 5074, 12064
- Madelung ionic electrostatic energy 760
- Maedi-visna virus 2968
- magic angle–spinning (MAS) spectra 6078
- MAGIC (multiparent advanced generation intercross) 4075
- Maglev (magnetic levitation) 6241, 6242, 6246–6249, 6251, 6254, 6256, 6263, 6273, 6279, 6281, 6286, 6288–6289
  - applications 6281
  - development programs 6263
  - electric transport 6246
  - electrodynamic 6249
  - electromagnetic 6242
  - energy storage 6288
  - engineering 6256
  - factory 6279
  - magnets 6254
  - passenger system 6242
  - physics 6247
  - power storage (MAPS) 6288
  - system 6263, 6266, 6271, 6284
    - construction costs 6284
    - first-generation 6263
    - passenger-only transport 6266
    - second-generation 6271
  - technology development 6241
  - train 4934
  - transport system 6248
  - vehicle 6241, 6251, 6256, 6261, 6262, 6273
    - loads 6286
    - quadrupole magnets 6261
  - water transport 6289
- magma 4182, 5217, 11614, 11616
  - degassing 5217
  - fluids 5228
    - primary neutralization 5228
  - resources 4167
- magmatic activity 11634, 11636
- Magneplane 6258
- magnesite 1912, 1914, 1919
- magnesium 1104, 7236, 7330, 7338, 9829
  - oxides 11856
  - silicate 1919

- magnetic
  - field 20–21, 7160, 7161
    - rotating 21
    - rotational transform 7161
    - stationary 21
  - levitation 6243
  - mirror 7160
  - nanoparticles 4662
  - reflections 6071
  - resonance imaging 10
  - resonance spectroscopy (NMR) 1186
  - saliency 24
  - scattering 6071
  - stiffness 6260
- magnetic-gear PM brushless drive 11547
- magnetism (magnetometer) 7799
- magnetite 8623, 11602
- magnetization 20
- magnetosphere 8471–8472, 8579
- main chains 6539
- maintenance respiration 3224
- maize 1109, 1119, 1122, 1276, 1499, 2703, 2707–2708, 4039, 4444, 4452, 4463, 8044
  - allele 2703
  - domestication 2703
    - traits 2703
  - exotic breeds 1119
  - herbicide-tolerant 4444
  - inbred 2703
  - insect-resistant 4452
  - lysine content 2707
  - rootworm resistance 4463
  - transgenic avidin-expressing 4039
  - waxy locus 2708
- major gene 476
- major marine ecological disturbance (MMED) investigation 6191
- malaria 502, 5369, 5372–5374, 5380, 6291–6293, 6295–6297, 6299–6302, 11070–11071, 11073–11079, 11081–11082, 11084, 11086–11090, 11998–11999, 12001–12003
  - artemisinin-based combination therapies (ACTs) 12002
  - atlas project (MAP) 11074
  - blood-stage vaccines 6300
  - chemotherapeutics 11082
  - chemotherapy 11081, 11084
  - control 11073, 11086, 12001
  - current insecticides 12003
  - current prophylactics 12002
  - diagnostics 11074, 11077
  - disease 6293
  - drug-resistant 6292
  - effects 11999

- endemic areas 12002
- endemic zones 11074
- epidemiology 6295
- eradication 6292
- gametocytocidal therapy 11086
- global burden 11076
- health costs 11079
- hypnozoites 11086
- immunity 6296
- influence of climate change 5372
- insecticides 11079
- insecticide-treated nets (ITNs) 12003
- life cycle 6293
- longer lasting insecticide nets (LLINs) 12003
- morbidity 11074
- mortality rates 11075
- multistage, multi-antigen vaccines 6301
- parasite 6292, 6293, 6296
- pathogenesis 6293
- pre-erythrocytic Vaccines 6299
- prevention 2790
- transmission 5372, 6295, 6302, 11078
- transmission-blocking vaccines 6301
- uncomplicated 6295
- vaccines 6291, 6292, 6296, 6298, 11073, 11087, 11088, 11090
  - development 6297, 11089
  - obstacles 6298
  - whole-organism vaccines 6302
- malate-oxaloacetate 358
- maleate 6916, 6924
  - functionality 6924
  - half-esters 6916
- maleinized
  - hydroxylated oil 6904
  - soybean oil monoglyceride 6902, 6912
    - resin synthesis 6912
  - triolein oil 6925
- malignant melanoma (MM) 9661
- malignant tertian malaria 11076
- malinated hydroxylated oil polymer synthesis 6914
- malnutrition 1677, 1683, 1687–1688, 1690–1691, 2754, 4525
  - agronomic approaches 1690
  - biofortification 1690, 4525
  - conventional breeding 1691
  - emergency measures 1687
  - fortification programs 1688
  - long-term measures 1688, 1690
  - supplementation programs 1687
- mammal/mammalian 3270, 3599, 10088
  - livestock 1747
  - metabolomes 1186
  - oxidative damage 3599
  - toxicity tests 6797
  - uptake of contaminants 3270
- managed pressure drilling 4403
- mandatory renewable energy target (MRET) 4485
- manganese 717, 791, 2418, 4889, 9951
  - leaching 2418
  - oxide spinel 716, 717, 725
- Mangrove ecosystem 570
- Manhattan project 3789, 3817
- man-made
  - aquifers 10556
  - ecosystems 8859
  - metabolism 10579
- Manning equation 9054–9055
- mannopine synthase promoter (pMAS) 10677
- manure-borne bacteria 7682
- Manzamine A 3164
- maple syrup urine disease (MSUD) 1683
- mapping 3071, 3078, 3171–3172, 6598
  - karst areas 5659
  - of road markings 3078
  - of safety barriers 3071
  - robot-centric 3172
  - safety barriers 3072
  - satellite-based 3171
- MapQTL 6698
- Maralinga test site 3541
- Marcus model 3418
- Marek's disease 641
- mariculture 526, 528, 558, 570, 6309, 6356, 6389, 7323, 9183
  - best management practices 9183
  - in the Mediterranean 6356
  - OTEC-based 7323
- marine
  - agronomy 546, 557, 576, 9116
  - and hydrokinetic (MHK) energy 6345–6349, 6351–6352
    - development 6349
    - environmental effects 6349
    - exclusion of aquatic receptors 6352
    - installations 6347
    - mitigation strategies 6351
    - ocean currents 6348
    - regulatory drivers 6351
  - risk evaluation 6352
  - river turbines 6348
  - salinity gradients 6348
  - technology 6347
  - temperature gradients 6348
  - tidal devices 6348
  - wave energy converters 6348
- animals 9157
  - as sentinels 9157
- aquaculture 513, 525, 582, 6760, 7386–7387
  - small-scale 7387
- biodiversity 2496, 3152
- biogeochemical cycles 7230
- biogeochemistry 6372–6373
  - cycles 6373
- biology 558
- biota 7230, 8411
  - radioactivity 8411
- biotoxins 9086
- cage culture 8202
- carbon cycle 6375, 7232
  - biogeochemical considerations 7232
- carbonates 7236
  - polymorph mineralogy 7236
- disturbance 6191
- ecological disturbances (MMEDs) 6191
- ecosystem 822, 3302, 3316, 6184, 6191, 6192, 6194, 11408
  - biomagnification 822
  - disease tracking 6191
  - distress 6194
  - ecosystem health 6180
  - emerging and reemerging diseases 6184
  - health of marine vertebrates 6192
  - sentinels of ocean health 6192
- energy technology 10618
- environment 3151, 6383, 7386, 8388, 8407, 8656, 9089
  - anoxic zones 6383
  - anthropogenic activities 9089
  - as a source of medicaments 3151
  - environmental radionuclides 8656
  - hypoxic zones 6383
  - radioactive substances 8388
  - radiological implications 8407
- finfish 6398
- fish 6311, 10090
  - integrated land-based cultures 6311
- fisheries 6386, 6388, 7263
- fisheries enhancement 6386, 6388, 6389–6391, 6394–6395, 6398–6399, 7263

- active adaptive management 6399
- effectiveness of stocking 6398
- legacy from the past 6395
- progress 6395
- responsible approach 6391
- scientific and strategic development 6389
- technological and tactical constraints 6390
- food web 829, 6182
- habitats 9168
  - sentinels 9168
- helminth infections 12021
- heterophyids 12021
- life 6405
  - OHI-related installations 6405
- litter 6194
- macroalgae 9111
- mammals 9166, 10089
  - as sentinels 9166
- mining 6634
- natural products 7385
- organisms 2264, 7237
  - antibiotic resistance 2264
- photosynthesis 553
- phytoplankton 7344
  - carbonic anhydrase 7344
- polar air 127
- pollution 8920–8921, 8927, 8931
  - remote sensing 8921
  - wind speed 8931
- protected area (MPA) 525, 561, 2504, 6355
  - recruitment subsidy 2504
- radioactivity 8658
- radioecology 8388, 8412
- radionuclide 8662
- reef ecosystem 829
- reserves 2504
- schistosome species 12043
- sentinel 9159
  - alternative use 9158
  - applications for monitoring exposure 9159
  - biomagnification 9158
  - chemical contaminants 9159
  - desirable characteristics 9158
  - sensitivity for bioaccumulation 9158
- snow 8396, 9135
- spatial planning (MPS) 561
- species hatchery 10330
- stratocumulus clouds 9699
- systems 1943
- toxin 827, 9157
- vegetable 9122
- vegetation 553
- mariner transposon 645
- maritime aerosol 9635
- marker gene 2597–2598
  - negative selectable 2598
  - screenable 2598
- marker haplotype 6431
- marker-assisted
  - backcross (MABC) 2532, 6435, 6694
  - breeding (MAB) 6427, 6434
    - improvement of crop performance 6434
  - recurrent selection (MARS) 2530, 2535, 6435, 6438
  - selection (MAS) 2530, 6429, 6435, 6437, 6694, 10868
    - in a segregating population 6437
- Markov Chain Monte Carlo (MCMC), 398
  - algorithms 6697
  - method 432
  - procedure 3184
  - techniques 2110
- Markov
  - decision process 94
  - model 3117
  - networks 3184
- marsh itch 12044
- Mars-van Krevelen-type (MvK) mechanism 2949
- MARTIN
  - grate technology 6477
  - infrared combustion control (MICC) 6468
  - technology 6451, 6491
  - waste-to-energy technology 6448
- mascon 4569
- mash 993
- masking 12289
- Maslow's hierarchy of needs 10361
- masonry
  - convection heaters 1364
  - stoves 1362
  - tiled stoves 1390
- mass balance 5249, 5675, 10965–10966
  - control volume 10966
  - equation 8892
- mass burn facility 9997
- mass concentration of particles 11302
- mass conservation
  - equation 10962
  - law 8637, 8645
- mass flow controller (MFC) 6730
- mass phenotyping 8014
- mass spectrometry (MS) 1186, 5574
- mass transfer 2025–2030, 2918, 2922
  - coefficients 2026–2027, 2030
    - of ammonia 2029
    - of oxygen 2028–2029
  - interfacial 2026
- mass transit 6496
- mass transport 2034, 2050
  - equation 2034, 2050, 10970
- mass transportation 7786
- mass-burn
  - facilities 11711, 11817
  - incineration 11788
  - incinerators 11789, 11817
- mass–energy relationship 3789
- massive artificial graphite (MAG) 6141
  - battery application 6141
- mass-transfer control processes 6735
- mastadenovirus 11990
- mastitis 1758, 2784, 2967, 10858
- materials 9031, 11709, 11789
  - balances 11709
  - biobased 9031
  - certificate 9038
  - entropy evaluation 11709
  - from processed refuse 11789
  - flow analysis (MFA) 3453
  - hazards 4850
    - life cycle contributions 4850
  - life cycle 4851
  - recovery facilities (MRF) 4758, 5298, 8778, 8785, 8786, 11832
  - safety data sheets (MSDS) 9027, 9029
  - to recycle 8797
- maternal
  - genetic effects 9361, 9378
  - genetic model 448
  - heterosis 1735
  - smoking 3640
  - to zygotic transition (MZT) 6151
- MatLab 8226
- matrix attachment region (MAR) 10678
- maturation promoting factor (MPF) 6162, 6164, 6169
- Maunder minimum 9801, 9806
- maximum brake torque (MBT) 5524
- maximum entropy method (MEM) 9896
- maximum ground acceleration 3235
- maximum ground velocity 3235
- Maxwell–Boltzmann velocity distribution 3800
- Maxwell's equations 3787, 3789, 7176
- meadow of constitution square 4701
- mean-headway strategy 107

- measurement vehicle 3070
  - laser scanner 3070
  - sensors 3070
- meat 10853, 10856
  - consumption 1754, 1757
  - with enhanced nutritional qualities 10856
- mechanical
  - battery 5107
  - braking 8854
  - coupling 3372, 3379
    - device 3379
    - speed couplers 3379
    - torque coupler 3379
  - recycling 8821
  - vapor compression (MVC) 9759, 9761
- mechanically switched capacitor 9341, 9345
- mechanically switched reactor 9341, 9344
- mechanics of motion 10614
- medaka 11411
- MEDEA program 283
- medical device battery 6498, 6499
  - design 6499
- medicinal plant 6519–6520, 6529–6531
  - controlling the expression of transgenes 6529
  - genetic engineering 6530
  - metabolic pathways 6531
  - transgenic plants 6531
- Mediterranean aquaculture 6355–6367, 7265
  - benthic impacts 6358
  - disease outbreaks 6360
  - ecosystem effects 6364
  - escapes 6362
  - fish farming 6358
  - herbivorous fish 6367
  - history 6355
  - indicators for sustainability 6367
  - integrated aquaculture 6366
  - introduced exotic species 6363
  - market 6363
  - parasites 6365
  - policy issues 6365
  - seagrasses 6364
  - sustainability 6356
  - use of probiotics 6361
  - water quality 6359
  - zoning 6366
- Mediterranean mussels 6764
- Mediterranean Sea environment 6355
- medium density fiber board (MDF) 1536
- mega-ammonia technology 3993
- mega-ampere spherical torus (MAST) 7162
- megacy 1887
- megafaunal species 6409
- mega-landfills 11828
- mega-methanol production
  - process 3984
- meganucleases 4498, 10912
- Megaron House 7644
- MegaSyn process 3984
- Mehler-peroxidase reaction 2644
- meiosis 6165, 6431
- Meishan pig 1772
- melanocytic tumor 9663
- melanogenesis 9661
- melanoma 11400, 11404
- melatonin 2829–2830, 10267
- melting ice 282
- membrane
  - bioreactor (MBR) 9564, 10191, 11889, 11961–11962, 11968, 11969, 11975, 11978
    - biomass 11978
    - conventional activated sludge process (CASP) 11975
    - microfiltration 11968
    - removal of endocrine disrupting compounds 11968, 11969
    - treatment of municipal wastewater 11968
    - ultrafiltration 11968
    - technology 11889
  - distillation (MD) 2916, 2920, 9760, 10540
    - bioreactor (MDBR) 11890
  - electrode assembly (MEA) 3883, 7695, 7758, 8174, 8186, 8189, 8208, 8330, 8341
    - area-specific resistance (ASR) 8341
    - design concepts 7758
    - PPA-processed *p*-PBI 8189
    - processes 7758
  - electrolytes 6538
  - filtration 10108, 10531–10532
  - fouling 2905, 11889
  - hydration 8210
- memory
  - brushless Machine 11548
  - effect 6945
- menaquinone 1685
- Mendel/Mendelian
  - defects 494
  - laws 390, 10896, 10903
  - resistance 6437
  - sampling effect 1727
  - sampling variance 418
- menhaden 3577
- meningitis 8154
- mercury 172, 300, 304–306, 833–839, 2195, 2210, 3592–3593, 3630, 3634, 4890, 4904, 4992, 6514
  - bioaccumulation 834, 837
  - biomagnifications 837
  - concentrations 838, 6189
  - cycling 833
  - distribution 833
  - in the oceanic ecosystem 837
  - intoxication 835–836
  - metallic 834
  - methylation 834
  - poisoning 305, 834–835
  - pollution 836
  - selenide 839
  - sources 833
  - tests 5205
  - toxicity 839
  - volatilization 833
- meridional overturning circulation (MOC) 5859
- Merino sheep 1758
  - blowfly 1758
- meristem activity 2666
- mesenchymal stem cell (MSC) 7223
  - as nuclear donors 7223
- mesocosm 3269
- mesophile 5050
- mesophyll 2625, 2643
- mesopic vision 11101
- mesoscale 11265, 11275
  - convective systems (MCS) 5071, 5072, 5074, 5078
  - iron fertilization 6379
- mesoscopic solar cells 6566, 6568, 7934
  - dye-sensitized 6568
- mesoscopic traffic simulation model 95
  - BusMEZZO 103
- metabolic
  - diseases 8312
  - engineering 6531
  - syndrome 8312
- metabolite 1189, 1484
- metabolome 6441
- metabolomics 1184–1186, 1189–1190, 1192–1193, 3588, 3658, 4496, 6532
  - bacterial 1193
  - environmental 1189
  - in animal sciences 1186
  - in microbiology 1192
  - in plant sciences 1190
  - with aquatic plants or algae 1192
- metabonomics 1185
- metagenomics 6328
- metagonimus 12025

- metal 4854–4855, 10051, 10053, 10055, 10158–10159, 10403–10404
  - bioaccumulation 10055
  - bioavailable form 10053
  - bipolar plates 7709
  - contaminants 10157
    - geochemical fixation 10157
    - stabilization 10157
  - excavation 10159
  - global production 10404
  - hazard characterization 4854
  - hazardous waste output 4855
  - hydride alloy (MH) 6945
  - hydride–nickel cell 750
  - hydroxide 8609
  - interconnects 9858, 9860
  - mine wastes 6669
  - monitored natural attenuation 10159
  - ores 10406
  - organic chemical vapor deposition (MOCVD) 9402
  - oxide 798, 8603, 8606
    - cathodes 6100
  - phthalocyanines 8272
  - phytoextraction 10158
  - phytoremediation 10158
  - phytostabilization 10159
  - phytovolatilization 10159
  - pump-and-treat method 10404
  - recovery 6662
  - recycling 8810
  - remediation methods 10404
  - speciation 10051, 10052
  - stabilization in soils 10158
  - sustainable remediation methods 10403
  - toxicity 10055
    - predictions 10059
  - valence state 4854
  - working fluids (MWFs) 7610
- metal-air battery 679, 793, 3853, 3856, 11517
- metal-insulator-metal (MIM) model 7563
- metalloids in marine systems 7356
- metallomacrocycle 8272
- metalloporphyrin 5176
- metallothionein 3257
- metallurgical
  - coke 2195, 8104
  - grade silicon (MGS) 9610
  - industry 9608
  - silicon 9198
    - purification 9198
- metamorphic rock 4186
- metaplast 7478
- metapopulation
  - ecology 5437
  - theory 947
- Metastrongyloidea* 12038
- metavanadate 4891
- metazoan 12019, 12042
- meteoric waters 5230
- meteorology/meteorological 6583, 11274, 12214
  - computational models 11274
  - flows 11276
  - perturbation modelling 11276
  - processes in urban areas 11263
  - wind power 12214
    - in urban areas 11263
- methacrylated
  - glycerides 6918
  - soybean oil monoglycerides 6916
- methadone 10646
  - programs 5006
- methanation 1149, 1450, 1662, 2416
  - synthesis 1442
- methane 245, 281, 330, 337, 344, 609, 663, 666, 668, 849, 851, 1029, 1107, 1134, 1147–1148, 1152, 2211, 2241, 2243, 2746, 3845, 3957, 3964, 3970, 3994, 4123, 5119, 5471, 6651–6652, 6722, 7446, 7843, 8175, 8885, 9697, 9703, 10483, 11835
  - bacteria 5119
  - cold flame oxidation 3994
  - coupling reaction 3994
  - fermentation 5121
    - bacteria 1148
  - gas 4767
  - hydrate 334, 341, 344
    - replacement of CO<sub>2</sub> 344
  - reforming for methanol/DME synthesis 3970
  - steam reforming 3964
  - methane synthesis reactor 1443
  - markets program 6652
- methane-to-gasoline (MTG) process 2225
- methanization 1150
- methanogenesis 163, 4127
  - microbes 5167
- methanogen 1151, 6328
- methanol 381, 928–929, 1049, 1429, 2225, 2247, 2249, 3389, 3866, 3883, 3935, 3938, 3958, 3980–3983, 3988–3989, 3994, 5466, 5477, 7594, 8175, 8237, 11444
  - chemical processes 3989
  - commercial synthesis 3983
  - dehydration reaction 2249
  - distillation plant 3981
  - MOGD process 3988
  - synthesis 2248, 3981–3983
    - activities 3983
    - catalysis 3982
    - reaction pathway 3981
    - reactors 3982
      - to gasoline (MTG) process 3988
- methanol-to-gasoline technology 2250
- methanolysis 928–929
  - lipase-catalyzed 929
- methanotrophic bacteria 6411
- methanotroph 6414
- methemoglobinemia 3783
- methicillin-resistant *Staphylococcus aureus* (MRSA) 5061, 5383
- methionine 836–837, 1189, 10843
  - adenosyltransferase 3608
  - sulfoxide reductases (MSR) 3666
- methoxyfenozide 2597
- methoxyl 1519
- methylation 3257, 3604
- methyl chloride 10131
- methyl-diethanolamine (MDEA) 2238, 3964, 3993
- methylester 1045
- methylmercury 305, 825, 833–836, 839, 3593, 3629–3630, 3634, 8350
  - poisoning 835
  - pollution 836
- methyl-tertiary butyl ether (MTBE) 189, 303, 3989, 4590, 5477
- methyltrioxorhenium 3943
- metro systems 1821, 1863, 1871
- Michael addition 4608
- Michaelis–Menten
  - enzymatic kinetics 5206
  - formula 2668, 9053
- micro anaerobic digestion 1424
- micro cogeneration 1402, 1415, 1421
  - global importance 1402
  - potential fields of application 1421
- micro engines 5502
- micro gas turbine 1412, 1416, 1421, 6832
- micro gasification 1424
- micro hybrid vehicle 11506
- micro porous layer (MPL) 7697, 7699
- micro turbine 6833
- microalgae 350, 352–353, 362, 553, 559, 561, 927, 1192, 4820, 5117, 6310, 6313, 11439
  - hydrogen production 5117
  - ponds 6313
- microarray technology 6795
- microbacteria 10957
- microbe 498, 6190, 7671

- microbial
  - contaminants 7673
  - electrolysis 5167
  - fatty acid biosynthesis pathway 500
  - fuel cells (MFC) 11944
  - phytase 10842
  - pollutants 7670, 7675, 7688
  - pollution 1630, 6331, 11901
  - resistance 499, 507
  - source tracking (MST) 6330
  - transfer 7681
- microbial-enhanced oil recovery (MEOR) 7819–7820
- microbisporicin 504
- microcalorimetry 7538
- microcin C7 507
- microclimate 2832
- microclimatic design 914
- microclimatology 6639
- micro-combined heat and power (micro-CHP) 9913
- microcrystalline
  - material deposition 9249
  - silicon photovoltaic modules 9436
  - solar cells 9269
- microcystin 4831, 4834, 4835
- micro-earthquake 4215, 4422–4423
- microelectricalmechanical (MEM) systems 8195
- microelectronics 11542
- microenvironment/microenvironmental 249
  - effect 464
  - sensitivity 470
- microfiber glass separator 8750
- microfibril 963
- microfiltration 11885
- micro-gas turbine (MGT) 1331, 1332
- microglass separator 8750
- microgrids 3019
- microhomology 2601
- micro-hybrid 3485, 3487
- microirrigation 5628
- micro-light shelf 2837
- microminerals 1687
- micronutrient 1677, 1682, 1690, 3775
- microorganism 498, 1628, 11389–11392
  - biological effects 11389
  - effects of UV radiation 11390
  - UV environment 11389
- microparasite 523
- Microphallidae* 12027
- micropollutant 2090, 10191, 10534, 11912, 11915, 11921, 11930, 11968, 11977
  - biodegradation 11977
  - micropollutant target compounds 11914
  - degradation pathway 11930
  - in river water 11930
  - solid phase extraction 11915
  - spatial and temporal occurrence 11921
- microporous polyolefin separator 8721
- microporous separator 8719
- microprocessor 11542
  - relays 12088
- micro-RNAs 10911
- microsatellite 480, 486, 493
  - instability (MSI) 3607
- microscale wave breaking 601
- microscopic phytoplankton 8954
- microscopic simulation model 95
  - MITSIMLab 95
- microscopic traffic simulation model 93
- microseismicity 4129, 4216
- Microsoft Virtual Earth 3171
- microspora 12042
- microspore 2647
- microsporidial gill disease of salmon (MGDS) 549
- micro-topography 2764, 3753
- microtubule 3159
- microwave 4643, 4615, 4644, 4660, 4663
  - for nano-catalyzed aqueous protocols 4663
  - for chemical synthesis 4644
  - irradiation 4650–4654, 4657
    - coupling reactions 4650
    - Heck coupling reaction 4651
    - Hiyama cross-coupling reaction 4652
    - nitrogen heterocycles 4654
    - reactions in near-critical water 4653
    - Sonogashira coupling reaction 4652
    - Stille reaction 4652
    - Suzuki reaction 4650
    - synthesis of nanomaterials 4657
  - nanoparticles 4660
  - scatterometer 7511
  - sensors 8930
- midazolam 3275
- Mie scattering 135, 325, 9630
- migration 3281
- mild hybrid electric vehicle 11507
- milk 2783, 10853–10854
  - composition 10854
  - consumption 1755
  - goats 1755
  - marketing systems 2783
  - powder
    - consumption 1755
    - production 1755
  - production 2782, 2784
    - traits 2784
  - productivity 10888
  - with enhanced nutritional qualities 10854
  - yield 2782
- milled-tooth bits 4394
- millennium ecosystem assessment (MA) 3314
- Minamata disease 835, 839, 4890
- mine/mining 6633–6634, 6636, 6638–6643, 6645, 6647–6649, 6651, 6653, 6655–6658, 6660, 6663, 6665–6667, 6671–6672, 6675–6676, 6678, 7810, 10405
  - acid rock drainage 6666
  - acidic drainage 6663
  - air pollution 6639
  - backfilling 6675
  - bioprocessing 6660
  - biosphere 6640
  - companies 2188
  - cryosphere 6640
  - drainage waters 11899
  - decommissioning 6641
  - design optimization 6657
  - eco-efficiency analysis 6643
  - engineering 6657
  - environmental impact 6633, 6636, 6648, 10405
  - excavations 7810
  - exploitation phase 6638
  - exploration 6638, 6648
  - extraction 6649
  - heap leach dumps 6676
  - history 6634, 6671
  - hydrosphere 6639
  - industry 6634, 6645
  - influenced water (MIW) 6653
  - life cycle 6648
  - lithosphere 6641
  - loss of biodiversity 6647
  - miner's rule 7413
  - natural resources 10405
  - pedosphere 6640
  - phytotechnology 6658
  - planning 6676
  - production 6679
  - reclamation 6671, 6678
    - plan 6649
  - recultivation phase 6641
  - remediation 6675
  - restoration process 6653

- revegetation 6678
- sites 6659
  - phytotechnology 6659
- small-scale 6641
- solid waste 6665, 6666
- subsidence 6651
- sustainability 6633, 6636, 6642, 6647, 6655
  - opportunity 6657
- tailings 6667
  - disposal 6672
- threat analysis 6657
- waste 6643, 6648, 6666
- water 6658, 6661
  - irrigation 6658
- mineral 1712, 1715, 6647, 6648
  - ash 5253
    - chemical analysis 5253
  - bioavailability 1715
  - carbonation 1909–1910
  - density in cereal grains 1715
  - deposit 6637, 6655
    - progressive exploitation 6655
  - exploration 4391
  - extraction 6647
  - fertilizer 1133
  - paragenesis 4098
  - processing wastes 11702
  - resources 6640
  - solubility 4097
  - storage in sink tissues 1715
  - sulfides 6639
  - transport 1712
  - trapping 4123
  - uptake 1712
- miniature suns 7157
- minibus 1860
- minichromosome 2585
- minimal erythema dose (MED) 11379
- MINLAKE numerical simulation model 5684
- mirror box skies 2820
- Miscanthus* 1107, 1279–1280, 1282, 1293, 1486, 1539, 1579, 2275, 2632, 6024–6025, 6027
  - as a biomass crop 1282
- miscellaneous agent 12045
- MISR (multiangle imaging spectrometer) 196
- missense mutation 488
- mite 5438
  - identification 5438
- mitigation 1633, 2115
  - goals 1642
  - hydrocarbons 1633
  - petroleum 1633
  - strategy 1628
    - bioremediation 1628
- mitochondria 357
- mitochondrial gene flow 3362
- mitochondrion 6168
  - inheritance 6168
- mitotic cell cycle 6165
- MITSIMLab 96
- mixed alcohols 11444
- mixed ash 11739
- mixed carbide fuel 4062
- mixed crops 10045
- mixed function oxidase (MFO) system 12300
- mixed ionic-electronic conducting (MIEC) 2938
- mixed metal montaminants 10428
  - electrochemical remediation 10428
- mixed oxide (MOX)
  - cathodes 6143
  - fuel 4062, 7145, 7188
- mixed traffic 1862
- mixed-mode ventilation 6889
- mixing length theory 2055
- mobile ad hoc network (MANET) 11553
- mobile mapping system (MMS) 3171
- mobile oxyanion 4872
- mobile phone 8716
- mobile robotics 3171, 3172
  - exteroceptive sensor 3172
- mobility 666, 3068
- mock urban setting test (MUST) 11273
- model atmosphere 9723
- model output statistics (MOS) 9645
- modeled solar radiation 9687
- modeling in animal breeding 436
- moderate resolution imaging spectroradiometer (MODIS) 196, 6762
  - satellite data 3215
- modern breeding method 4529
  - negative effects 4529
- modification 4107
  - weaponization 4107
- modified Mercalli intensity scale 2425
- modulation transfer function (MTF) 11107
- Mohr–Coulomb equation 4128
- molasses 1275
- molecular beam epitaxy (MBE) 9402
- molecular biology 2530, 6708, 10875
- molecular breeding (MB) 2682, 2683, 4517, 6692, 6693
  - hubs 6709
  - platforms (MBP) 2683, 6692, 6693, 6695, 6709, 6711–6714
- communities of practice 6713
- data management 6712
- demand-driven 6712
- human capacity 6711
- impact on crop breeding 6714
- markers services 6711
- potential 6709
- potential economic impact 6713
- precise phenotyping 6711
- scope 6709
- sustainability 6713
- technology-push 6712
- utilization 6711
- molecular clock 8139
- molecular diagnostics 5385
- molecular diffusion
  - coefficient 596
  - flow 2922
- molecular dynamics (MD) simulation 6038, 6046
- molecular flow 5635
- molecular genetics 6694, 10695
  - technology 7978
- molecular ideotype 6434
- molecular laser isotope separation (MLIS) 5642
- molecular marker (MM) 430, 2530, 2683, 6696
- molecular oxygen 612
- molecular pharming 8073
- molecular photovoltaic cells 6581
- molecular scattering 9718
- molecular weight cutoff (MWCO) 10532
- molecule 498
- Mollier chart 4277
- Mollier diagram 4255, 4274
- molluscan
  - mariculture 9180
    - best management practices (BMPs) 9180
    - certification standards 9180
    - integrated multi-trophic aquaculture (IMTA) 9180
    - regulatory standards 9180
  - shellfish 9099–9100, 9176
    - associated pathogens 9099
    - safety 9100
- mollusk culture 6760, 6766
- Moloney murine leukemia virus (MMLV) 643
- molten 2367
  - carbonate fuel cell (MCFC) 3388, 3851, 3867, 3879, 3881, 3884, 5134, 5138, 5142, 5170, 6720, 6722, 6724–6725, 6727–6728, 6730–6731, 6811, 7866, 9853



- analysis of Cell Behavior 6731
- anode 6725
- cathode electrode 6725
- components 6722
- electrochemical resistance 6727
- electrolytes 6721, 6722
- electrolyte loss in the cell 6724
- inert gas step addition (ISA) method 6730
- ohmic loss 6727
- open circuit voltage 6727
- oxygen reduction 6725
- performance analysis 6727
- reaction characteristics 6728
- rock resources 4167
- salt 2369, 2373, 2380, 2387, 3879, 6054, 10556, 10566
  - corrosion 5265
  - electrolyte 6056
  - liquid film receiver 2363
  - reactor experiment (MSRE) 4057, 4058
  - storage 10569–10570
- silicon 9206
- molybdate 11727
- molybdenum nitrides 8267
- momentum transfer 11268
- monazite 9948
- Monin-Obukhov similarity theory 3216, 6594
- monitored natural attenuation (MNA) 1632, 2445, 10430
- monk seal 3569
- mono-aromatics 10665
- mono-centric city 1821
- monochrome image 11125
- monoclimax 3284
- monocot 1484, 2593, 2596
- monocotyledon 9066
- monocrystalline
  - silicon 9207
  - transfer layer 9207
  - solar cell 9197
- monoculture 154, 547, 2749, 6311, 10045
- monoethanolamine 3993
- monofill 11747
- monogenetic volcano 11617
  - cones 11628
- monoglyceride 6898, 6904
- monomer 6897
  - triglyceride-based 6897
- monorail guideway 6272
- monosaccharide 1105, 1678
- monoterpene 3225
- monounsaturated fatty acid 4557
- monovalent cation 8608
- Monsi-Saeki equation 2620
- monsoon 2126, 5070, 6740–6744, 6747, 6749–6750, 6753–6755, 7256, 8905
  - circulation 6741, 6749, 6755, 7258
  - climate change 6753
  - climate system 6754
  - direct radiative forcing (DRF) 6747
  - dynamics 6742, 6750
  - evolution 6754
  - forecast 6742
  - high-resolution global models 6744
  - impacts of aerosols 6747
  - modeling 6740, 6743, 6755
  - precipitation regimes 7256
  - regions 6741
  - retrospective modeling 6744
  - seasonal characteristics 7256
  - tracking with driftsondes 5070
- monsoon-intraseasonal oscillations (MISO) 6743
- Monte Carlo
  - analysis 6612
  - computer programs 3809
  - method of simulating radiation 8540
  - simulation 3810, 6615
  - statistics 3819
  - transport 8555
    - calculations 8552
- montmorillonite 4594
- Montreal Protocol 177, 4116, 10134, 10137
- mooring 587, 593
  - single-point 593
- Moran's eigenvector map (MEM) 3337
- Moran's *I* 3334
- Morex allele 4078
- Morganella morganii* 5060
- Morgan 478
- morphine 10644
- morpholinoethanesulfonic acid 5209
- morpholino 6794
- Mortality 9657
- MOSFET 702
- moss bioreactor 8077
- motional narrowing 6082
- motive fluid pump 4290
- motor
  - design 11533
  - drive 11504, 11543
    - battery 11504
  - control strategies 11543
  - operation 12141
  - torque 3369, 3372
  - vehicle traffic 5982
- mountain glaciers 2776
- mouse epiblast stem cells 10821
- movement
  - prediction-based routing 11560
  - protein 2702
- movement-based routing algorithm (MORA) 11561
- moving boundary method 2765
- moving grate furnaces 1321
- moving vehicle detection system 11472
- Mt. Elbert-01 hydrate well 339
- mud
  - drilling 4383, 4428
  - noise reduction 4428
  - logging 4405
    - instrumentation 4405
- mulch farming 162
- mulching 2562
- multi-angle imaging spectroradiometer (MISR) 8943
- multiblock copolymer membrane 6552
- multicarrier generation 9425
- multicellular macro-parasitic helminth infection 11998
- multichannel image data 11122
- multiclass highway service 5040
- multicrystalline silicon 9201, 9203
  - industry 9218
  - solar cells 7952
  - wafer 9208, 9210–9214
    - extended crystallographic defects 9208
    - grain boundaries (GBs) 9208
    - hydrogenation 9210
    - improvement 9212
    - impurity 9208
    - impurity gettering treatments 9211
    - interstitial iron 9213
    - material improvement techniques 9210
    - n-type 9213
    - p-type 9214
- multicrystalline solar cell 9197
- multicyclone 1250, 1339
- multideestination
  - bus 5999
  - transit 5988
    - transit networks 6011
    - transit systems 6001
  - travel capability 6005
- multidrug resistance protein (MRP) 12308
- multi-effect
  - desalination 9761
  - distillation (MED) 2901
  - humidification 9760
- multielectron chemistry 5210

- multi-environment trials (METs) 4071
- multifaceted disease 12005
- multifocal camera 48
- multifocal vision system 47, 54, 61
- multi-gear transmission 3369, 3381, 10496, 10544, 11485
- multi-gene expression 10847
- multi-gene traits 10840
- multigenerational learning 10304
- multi-junction solar cell 9253, 9278, 9418–9420, 9429
  - lattice parameters 9420
  - optoelectronic properties 9420
- multi-laser sensor system calibration 3197
- multilateral initiative on malaria (MIM) 11072
- multimedia compartment (MMC) model 9137
- multimodal transportation system 1829
- multinary chalcopyrite compounds 9396
  - as photovoltaic materials 9396
- multi-nozzle quiet combustion” or MNQC system 6841
- multiphase
  - catalysis 3945
  - extraction (MPE) 2447
  - jets 10990
- multiphoton conversion 9424
- multiphysics finite element (FEA) analysis 44
- multi-planar LIDAR system 11457, 11460
- multiple
  - cropping 2741
  - exciton generation 9425
  - gene transfer (MGT) 2593
  - hearth furnaces (MHF) 5277
  - jets 10989
  - T-DNA repeats 10681
  - trait index 6440
  - vehicles 2478
    - path planning 2478
- multiple-stage steam separation 5230
- multiple-use marine area 515
- multipollutant monitoring 195
- multipotent mesenchymal stem cells (MSCs) 7224
- multipurpose pyroprocessing complex (MPC) 7154
- multi-robot motion planning 2479
- multi-sensor pedestrian recognition 6953
- multi-species pond cultivation 9110
- multi-stage desalination (MSD) 9760
  - with heat recovery 9760
- multi-stage flash (MSF) distillation process 2898
- multi-stage gasifier 1457
- multi-temperature generation 9427
- multi-trophic aquaculture 9182
  - environmental benefits 9182
- multi-vehicle motion planning 2476, 2478
  - decoupled planning 2478
- multiwall carbon nanotubes (MWCNT) 3853, 8294
- multixenobiotic resistance protein 12309
- municipal
  - incinerator fly ash 4874
  - piped water supply 6629
  - plastic waste 4008
    - composition of raw material 4008
    - properties of reclaimed products 4008
  - sewage treatment 11903
- municipal solid waste (MSW) 1538, 3997, 4755–4758, 4769, 4958, 5236, 5238, 5244, 5298, 5720, 5765, 5909, 5932–5933, 6450, 6465, 8097–8102, 8797, 8818, 9980, 9982, 9991, 10009, 10014, 10578, 10588, 11596, 11703, 11721, 11739, 11824, 11830–11832, 11836, 11841–11842
  - air required for combustion 11824
  - boiler efficiency 11841
  - calorific value (CV) 5298
  - carbon content 4756
  - carbonaceous materials 8098
  - characterization 10009
  - chemical heat content 8098
  - chlorine concentration 11831
  - collection 11831
  - combustion 6450
  - combustor ash 11703
  - composition 8098, 11830
  - composting 11832
  - decision support tool (MSW-DST) 11688
  - discarded in landfills 5933
  - flue gas temperature after boiler 11841
  - fossil carbon content 4758
  - gasification 6465, 8098, 8101
  - generation 5765, 10009
  - grate combustion facility 8099
  - heating value 11830
  - incineration 4870, 5238, 10588, 11596
  - incinerator 4866, 5298, 11721
  - in Japan 3997
  - inorganic materials 8098
  - low heating value 11842
  - management (MSWM) 9984
  - net calorific value 11842
  - non-transferred arc plasma torch 8100
  - organic compounds 8099
  - plasma-assisted gasification 8100
  - plasma-assisted processes 8102
  - post-recycling 5932, 11836
  - processing 11831
  - recycling 9991, 11831
  - reuse 9982
  - thermal treatment 8097
  - transferred plasma arc 8100
  - vitrification 11583
- municipal waste 1177, 4903, 11818, 11821, 11860
  - aluminum content 11860
  - heating value 11821
  - landfills 5762
  - properties 11818
  - plastics 4011
- municipal wastewater 2335, 9564
  - discharge 2084
  - treatment 11874
- muon decay 8578
- murine hepatitis virus 2969, 10859
- murine *Mx1* gene 2965
- musculoskeletal disease 9655
- mushroom corals 2493
- mussels 520, 521, 523, 549, 552, 1965, 6759, 6763, 6746
  - cultivation 6764
  - culture 6758
  - droppers 6763
  - filter-feeding 552
  - ropes 6763
  - species 6764
    - in open ocean cultivation 6764
- mutagenesis
  - breeding 4493
  - of the nuclear genome 366
- mutant allele 2709
- mutation 402, 488, 3258, 3600–3601, 3603
  - accumulation 3600
  - causative 488
  - epigenetic 3603
  - in somatic cells 3258
  - oncogenic 3600
  - radiation-induced 3258
  - single-base substitution (SBS) 3601
  - underlying QTL 488
- mutual inductance matrix 38
- mycobacterial infection 11135
- Mycobacterium* 503, 5058
  - *bovis* 11130
  - *marinum* 5058, 5064
    - treatment 5064
  - *smegmatis* 503

- *tuberculosis* 500, 503, 11130, 11132–11133, 11139
  - infection 11132
  - transmission 11133
  - mycobiota 2561
  - Mycoplasma hyopneumoniae* 1651
  - mycorrhizae 1283
  - mycorrhizal fungi 877
  - mycotoxin 10705, 10746
  - myostatin 10892
    - gene (*MSTN*) 488, 10857
  - Myxobolus cerebralis* 6195
    - parasite detection 6195
  - Myxosporea* 12019
  - Myxozoa* 12042
- N**
- N*-acetylhexosaminidase 4035
  - Nachhaltigkeit 3289
  - Naegleria fowleri* 8759
  - Nafion 6554, 6559–6560, 7760, 7771–7772, 8183, 8189, 8209, 8214, 8332, 8337, 8343, 8725
    - composites 6560
    - membrane 6551
  - naloxone 10646
  - nanocarbon 6769, 6788
    - for supercapacitors 6769
  - nano-catalyst 4643, 4662–4665, 4667
    - as susceptors 4663
    - MW-assisted 4662
    - ruthenium hydroxide 4665
    - stability 4664
  - nanocomposite concept 9299
  - nanocrystalline materials 9302
  - nanocrystal 7748, 7749, 9250
  - nanoengineering 8211
  - nano-environmental and human safety (nanoEHS) 6791
  - nano-ferrite 4661
  - nanofiltration 2904, 10530, 10532, 11884
  - nanogate capacitor 3430
  - nanohybrid capacitor (NHC) 3432, 3434, 3441
  - nano-immunomagnetic particle 1656
  - nanoimprint technology 11118
  - nanolayer 7892
  - nanomaterial 4657, 4659, 6790, 6792, 6800
    - greener synthesis 4659
    - toxicity 6800
  - nano-optical filter 11118
  - nano-organocatalyst 4666
  - nanoparticle 4667, 10588
  - nanoporous carbon 6778
    - electrodes 6776
  - nanorod 6579
  - nanoscroll 7892
  - nanosheet 7892
  - nanosized photocatalyst 7890
  - nano-sizing cathode powder 730
  - nanostorage capacitor 3430
  - nanostructure 7891–7892
    - electrodes 8212
    - one-dimensional (1D) 7891
    - two-dimensional (2D) 7892
  - nanostuctured
    - silicon 9298
    - anodes 9305
    - thin film (NSTF) 7707
    - catalyst 7744, 8343
    - electrodes 8213
  - nanosynthesis process 6800
  - nanotechnology 6790
  - nanotoxicity 6790, 6792–6793, 6795–6797
    - assay 6796
    - high-throughout testing 6795
    - tests 6792, 6793
      - embryonic zebrafish 6793, 6797
  - nanotoxicology 4615, 6790, 6792, 6797
    - in green nanoscience 6790
    - mammalian models 6792
    - models 6792
    - role in green nanoscience 6792
    - zebrafish model 6797
  - nanowire 9304
    - silicon-based 9304
  - naphtha 2243, 2247, 3978, 3980, 4010
    - slurry phase distillate (SPD) 3980
  - naphthene 7844
  - naproxen 11926
  - narrowband multifilter radiometers 11150
  - Nasicon 726, 730, 762, 727
    - framework 762
  - National Air Pollution Control Administration (NAPCA) 215
  - National Cattle Evaluation (NCE) 1727, 1738
  - National Ecological Observatory Network (NEON) 3205
  - National Electrical Manufacturers Association (NEMA) 3007
  - National Emission Standards for Hazardous Air Pollutants (NESHAP) 4882
  - National Environmental Policy Act (NEPA) 3354, 10016
  - National Fire Protection Association (NFPA) 3007
  - National Immunization Day (NID) 8146
  - National Maglev Network 6282–6284
    - private financing 6284
  - National Morbidity and Mortality Air Pollution Studies (NMMAPS) 226
  - National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 2008
  - National Pollutant Discharge Elimination System (NPDES) 1937, 2076
  - National Priority List (NPL) 2008
  - National Spherical Torus Experiment (NSTX) 7162
  - National Toxicology Program (NTP) 3636
  - native fluid 4124
  - natural attenuation 1632, 1638, 10429
  - natural capital 190
    - Natural Capital Project (NatCap) 3321
  - natural cooling 908, 3683
  - natural disaster 916, 3232, 3234, 3553, 8940, 10484
    - remote sensing 8940
  - natural draft furnace 1354
  - natural draft operation 1357
  - natural earth systems 5403, 5418
  - natural earthquake 2424
  - natural ecosystem 534
  - natural enemy partitioning 10076
  - natural estrogen 11962–11963, 11967, 11978
  - natural fission reactor 8476
  - natural gas 1038, 1438, 1662, 1674, 2165, 2254, 3844, 3846, 3859, 3928–3929, 3956–3957, 3959, 3964, 3968, 3987, 3993–3994, 4770, 5470, 5485–5486, 6679, 6806, 6811, 6836, 6846, 7087, 7446–7447, 7449, 7454, 7802, 7843, 9337, 9604
    - combustion 6836
    - condensation boiler 9546
    - consumption 3968
    - conversion to syngas 3957
    - coproduction of methanol 3987
    - desulfurized 3964
    - direct conversion to liquids 3993
    - direct injection (DI) 5485
    - discoveries 6679
    - drilling technologies 6846
    - emissions 6836
    - exhaust gas recirculation (EGR) 5485
    - fuel 6738
    - gasoline 7803
    - global reserves 7454
    - global resources 7446
    - history 6811
    - hydrates 330
    - in conventional fields 7449
    - in electricity generation 6846
    - liquefaction 3959
    - liquids (NGL) 3957, 7449
    - methane content 3957

- oxidative coupling to light hydrocarbons 3994
- pipelines 9337, 9354
- power 6804
- selective oxidation to methanol 3994
- system 1227
- thermal decomposition 9604
- utilization 6811
- vehicles 5465, 5485
- natural gas–fired gas turbine 6843
  - economics 6843
- natural gasoline 7803
- natural genetic engineering 4518
- natural graphite 6141
- natural grassland 1554
- natural green roof 4732, 4739, 4752
  - total phyto-mass 4732
- natural heat recharge 4226
- natural heating 905
- natural hot springs 5220
- natural illumination 2804, 2809, 9742
- natural image 11123
  - traffic-relevant color information 11123
- natural light 6891
  - sources 11115
- natural mutation 4518
- natural oil 6897
- natural opiate 10644
- natural organic matter (NOM) 7331, 10058, 10659, 11930
- natural radiation 3583, 8470, 8479
  - sources 3521
- natural radionuclide 8453, 8462, 8600
  - in the environment of caribou/reindeer 8453
- natural resources 3344, 6655
  - adaptive management 3344
  - flows 6853
  - management 3342, 3346, 3355
  - overexploitation 6655
- natural sandwich material (LNS) 1281
- natural selection 10071
- natural terrestrial plants 11397
- natural triglyceride 6898
- natural ventilation 902, 3684–3685, 6865, 6870–6871, 6873, 6876, 6880–6882, 6884, 10269, 10334
  - airflow rate 6871
  - benefits 6882
  - computer-aided prediction 6884
  - condensation management 6880
  - design
    - elements 6884
    - guidelines 6881
    - requirements 6873
  - effectiveness 6880
  - fire safety 6880
  - for cooling 6876
  - fresh air 6873
  - health 6884
  - humidity 6880
  - in-built environment 6865
  - models 6884
  - noise 6876
  - principles 6870
  - productivity 6884
  - urban pollution 6876
  - with mixed-mode mechanical conditioning 3685
- natural wetlands 11892
- naturally occurring radioactive material (NORM) 3519, 5561, 8469, 8479, 8564, 8601
- naturalness 1543
- nature deficit disorder 11349
- Nature Research Center (NRC) 3206
- nature 2744
  - domestication 2744
  - reserves 1557
- nature-deficit disorder 3205
- Navier–Stokes equations 2767, 8905, 10977, 10979, 12065, 12075, 12210
  - Reynolds-averaged 10977, 10979
- navigation 3175
  - channel 3031, 3048
  - dredging 3031, 3042, 3045, 3048
    - environmental effects 3042
  - GPS/IMU based 3175
  - maps 3068
  - satellite 8515
  - systems 3083–3084
    - in-vehicle 3084
- NCA 713
- NdFeB magnet 25, 27, 30
- Nd:YAG laser 311
- near isogenic line (NIL) 6433
- near-edge X-ray absorption fine structure (NEXAFS) 6076
- near-infrared (NIR)
  - sensitivity 11126
  - spectrum 9723
- nearshore
  - marine 6759
  - wind power 12245
- near-surface temperature 4910
- neat fuel 11434
- necessary water 10189
- NEDOL process 2233
- negative electrode material 6128, 6140, 6941, 6511
  - lithium ion cell 6140
- neighbor-awareness position update (NAU) 11554
- neighborhood scale model 11276
- Nellore breed 1760
- nematicide 2567, 5440
- nematocyst 12046
- nematode 12029, 12037, 12042, 12044
- Neobenedenia* sp. 3565
- neodymium magnet 26
- neoenemics 3362
- neomycin phosphotransferase 2597
- neonate 3626–3627
  - elimination rates 3627
  - hydration of the skin 3626
  - metabolic pathways 3627
- neopentyl glycol (NPG) 6902
- nepheline 1924
- neriestoxin 3152
- Nernst equation 2935, 5139
- Nernst potential 6570
- Nernst-Einstein equation 6083, 6548
- Nernst-Einstein-Townsend equation 10421
- Nernstian loss 5155
  - voltage drop 5155
- Nernst-Masse 3929
- Nernst's law 3875
- nerolidol 4036
- nervous system 3632
- nesquehonite 1919
- nested association mapping (NAM) 4075
- nested regional climate model 8905
- nested-association mapping (NAM) 6443
- net calorific value (NCV) 1200, 1234, 1331, 9832, 9838, 11842
- net carbon assimilation 3223
- net collector efficiency 9543
- net energy
  - analysis 2184
  - efficiency 868
  - metering (NEM) 10454, 10463, 10460, 10466, 10476
    - tariffs 10460
- net pen culture 590
- net present value (NPV) 4789
- net primary productivity (NPP) 161
- net solar gain 7644
- net solar radiation 10626
- network and information growth 3308
- net-zero building 3676, 7643, 7665, 10342
- net-zero energy performance 8710
- neurodegenerative prion disease 10859

- neuromodulation 6510
  - batteries 6510
- neuronal migration 3628
- neurostimulator 6510
- neurosyphilis 11075–11076
- neurotoxic shellfish poisoning (NSP) 9085
- neurotoxicity 3634
  - PCB-related 3634
- neurotoxin 834, 2085, 3586, 3593, 3635, 4832, 7272, 7277
- neutrino 3794, 8537, 8561, 11206, 11208
- neutron 3788, 3794–3795, 3800–3803, 3805–3812, 3814, 3815, 3817–3818, 7208, 7209, 7213, 8468, 8552–8554, 8567, 8569, 11206
  - balance 3795, 3800, 3803, 3807
  - Broglie wavelength 3802
  - capture 3801
  - chain reaction 7114
  - channeling 3810
  - density 3805, 3807, 3814, 3817
  - detection 5567
  - detectors 5569, 7209
  - deterministic transport theory 8554
  - diffraction 6070–6072, 7542, 9896
  - diffusion equation 3810, 3812
  - distributions 3805
  - dosimetry 3026–3027, 8551
    - albedo technique 3027, 8551
  - energy 7089, 7099
    - distributions 8569
  - fluctuations 3818
  - kinetic energy 3794
  - loss 3808
  - measurement 7208
  - momentum 3802
  - Monte Carlo simulation 3809, 3815
  - multiplication factor 3808
  - poisons 7094
  - production 3808
  - reaction 3806
  - scattering 3801
  - shielding 8540, 8549–8550
    - capture gamma photons 8549
    - with concrete 8550
  - skyshine 8553
  - sources 7213, 8567
  - spectroscopy 5568
  - streaming 8552
  - transport equation 3805, 3807, 3809, 3811, 3818
- new climate proof crop 2640
- “New Deal” legislation 3288
- new drug entity (NDE) 6521
- new greenery 11372
- new open space 11372
- new transport equation 3806
- new urban landscape 11365
- Newcastle disease virus (NDV) 641, 8075
- Newtonian gravitation 2100
- Newton–Raphson iteration method 4096
- Newton’s law 12065
- Newton’s theories of gravitation 10614
- next-generation sequencing (NGS) technology 6428, 6529
- Niacin 1684
- niche opportunity 10079
- nickel 172, 4861–4862, 4890, 9952
  - active materials 6939
  - batteries 6938–6939
  - cadmium 6943–6944
  - cadmium batteries 676, 777, 6943
    - fiber plate batteries 6944
  - pocket and tubular plate cells 6943
  - sealed sinter plate cells 6944
  - cobalt manganese oxide 6144
  - electrode 6939–6940
    - construction 6940
    - reaction 6939
  - hazard assessment 4861
  - metal hydride (NiMH) battery 707, 775, 779–782, 3479, 3483, 6946, 8717
    - cylindrical 781
    - overcharge 780
    - over-discharge reactions 780
    - prismatic 782
    - types 780
  - metal hydride (MH) electrode 6945
  - oxyhydroxide (NiOOH) 779, 11515
  - sintering 9873
- nickel-based battery 6938, 11515
- nickel-hydrogen battery 707, 6940, 6948
- nickel-iron battery (Ni-Fe) 6940, 6942
  - fabrication process 6942
  - performance 6942
- nickel-metal hydride cell 676
- nickelous hydroxide (NiOOH) 777
- nickel-zinc battery 679, 6947
- Nicotiana tabacum* 10671
- Nicotiana 10704
- nicotinamide adenine dinucleotide (NAD) 1684
- nicotine 10639
- night ventilation 3684, 3693
- night vision 11100
  - cameras 11098
  - environment 11104
  - images 11102
  - systems 11103, 11126
    - camera-to-display 11126
- nighttime driving 11099
- nikkomycin 503
- Nile red 361
- NIMBY (Not in My Back Yard) syndrome 5721
- nino3 SST 2519
- niobate oxide 7889
- niobium oxynitride 8271
- niobium-titanium (NbTi) 6251
- Nipponbare protein 2698
- NIR
  - illuminator 82, 87
  - spectra 75
- Nisin 504
- nitrapyrin 3773
- nitrate 1103, 2088, 3770, 3781, 3783, 7671
  - concentrations 2088
  - radical 11317
  - reductase 1192
- nitric acid 119, 134, 11317
  - trihydrate (NAT) 130
- nitric oxide (NO) 250, 4968, 5488
- nitride fuel 4062
- nitrification 884, 1136, 3455, 3773, 3781, 11894, 11901, 11936, 11956
- nitrification–denitrification process 10961
- nitrile 7579
- nitrite salt 10569
- nitrogen 552, 849, 1000, 1103–1104, 1109, 1308, 1433, 1668, 2169, 2632, 2641, 2662–2665, 2667–2668, 2670, 2672, 2674–2677, 2687, 2747, 3592, 3776–3777, 4558–4560, 6377–6378, 7671, 7989, 8350, 9827, 10041, 11894, 11896, 11936
  - absorption efficiency (NAE) 2674, 2677
  - assimilation 6378
  - availability 2641, 2664, 2676, 4559–4560
  - biogeochemical cycles 6377
  - concentration 2664
  - conversion efficiency 2675, 2677
  - critical plant concentration 2665
  - crop responses 2662
  - nitrogen cycle 6378
  - deficiency 2670, 2672, 2673
    - effects on harvest index and components of grain yield 2673
    - effects on leaf and canopy photosynthesis 2672
  - demand 2663, 2665
  - denitrification 11896

- dilution effect 2668, 2670
- dioxide pollution in urban areas 11301
- distribution 2676
- emission 7989
  - shadow price 7989
- fertilization 4559
- fertilizer 1104, 2562, 2616, 2662, 2663, 2676, 3776, 4560, 9325, 10749, 11332
- fuel bound 1308
- gas 10959–10960
- harvested index (NHI) 2676
- heterocycles 4654
- in plants 2663
- in soils 2662
- nitrification 11896
- nutrition index (NNI) 2662, 2668
- oxide (NO<sub>x</sub>) 170, 230, 666, 2277, 2282, 2746, 3641, 6806, 8349, 11585, 11855
  - emissions 666
  - low NO<sub>x</sub> technologies 6483
  - molecule 666
- supply conditions 2677
- taxation 7989
- nitrogen trichloride 10653
- uptake 2667, 2676
- use efficiency 2674, 2677, 3777
- volatilization 11896
- nitrogen-rich nanocarbon 6781
- nitrophenol 1636
- nitrophosphate 2747
- nitrous oxide 245, 849, 883, 1134, 1136, 5241
  - emissions 1136
- nitroxyl radical organocatalyst 7606
- no observed adverse effect levels (NOAEL) 3254, 3586
- no observed transcriptional effect levels (NOTEL) 3275
- nodal method 3813
- nodularin 4832
- noise 12279, 12288
  - auditory system 12288
  - dose–response relationships 12288
  - measures 12279
  - pollution 12288
- nonadditive genetic deviation 418
- nonaqueous clathrate 330
- nonaqueous phase liquid 10962
- non-condensable gas (NCG) 4247, 4311, 4326, 4425
- non-CO<sub>2</sub> emission 1504
- nondestructive assay (NDA) technique 7207
- non-enzyme protein 8032
- non-ferrous slag 11703
- non-flame incineration 6975–6976
- nonfood aquaculture 576
- non-fossilized organic material 1608
- nonground vehicle 5088
- nonhazardous waste materials 4867, 5734
- non-Hodgkin's lymphoma (NHL) 3646, 8066
- non-homologous end joining (NHEJ) pathway 10822
- nonhuman biota 8409, 8463
  - radiation dose 8463
  - radiological protection 8409
- nonintegrated two-stage liquefaction (NTSL) 2231
- nonionizing radiation 5574
- non-methane hydrocarbon (NMHC) 609, 5488
- nonnative species 5549, 5551, 5556
  - Allee effects 5556
  - biological control 5556
  - maintenance control 5556
- non-noble metal catalyst (NNMC) 8285, 8286, 8297
  - activity 8286
  - Fe-N-C catalysts 8297
- nonnucleoside reverse transcriptase inhibitors (NNRTI) 5011
- nonparasitic agent 12046
- non-pharmaceutical proteins 8078
  - plant-derived 8078
- non-photochemical quenching (NPQ) 355
- non-photosynthetic sinks 2628
- non-platinum-group metals (non-PGM) 373
- nonpolar carbon dioxide 10170
- non-polio enterovirus 8149
  - genomes 8138, 8141
- nonreactive radionuclide 11231
- non-renewable
  - energy resources 1602
  - generation 3014
  - resource depletion 548
- nonribosomal peptide synthases (NRPS) 504
- non-Sabin-like virus 8153
- non-target arthropod 10718
- non-woody biomass fuels 9827
- non-wovens 8719
  - materials 8725
- nopaline synthase gene (pNOS) 10672
- nopaline 10677
- Nordic power market 12110
- norhalichondrin B 3159
- normal hydrogen electrode (NHE) 6570
- normalized difference vegetation index (NDVI) 2618, 6221
- Norovirus 7385, 9105, 11986–11987
  - biological properties 11987
  - cultivation 11987
  - genogroups 11986
- North American monsoon (NAM) 7256
- North Atlantic
  - deep water (NADW) 5859, 8677
  - oscillation (NAO) 2137, 2455, 5873, 9805–9806
  - temperature predictions 2143
- North Pacific
  - gyre oscillation (NPGO) 6231
  - pressure index (NPPI) 2135
- Norwalk virus 11986
- NO<sub>x</sub> emission 273, 1333, 1348, 1391
  - from biomass combustion 1333
- no-tillage 2748
  - agriculture 3592
  - cultivation 1270
- not-in-my-back-yard syndrome 12227, 12230
- novel food regulation 10772, 10774
- novel gene products 10845
- novel protein foods (NPF) 1547
- novel trait<sub>s</sub> 4521
- noxious photochemical smog 245
- n-type silicon 9213
- nuclear accident 3585, 5592, 7005, 7016–7019, 7023–7025, 7030, 7047, 8389, 8602
  - areas
    - of accumulation 7025
    - of erosion 7024
    - of transportation 7024
  - biouptake rates 7019
  - catchment area 7016
  - countermeasures 7047
  - erosion–transportation accumulation 7024
  - fallout
    - curves 7018
    - on the catchment 7023
  - modelling coastal marine systems 7030
  - rivers fluxes 7017
  - sediment transport 7018
  - suspended particulate matter 7024
- nuclear clad material 7196
- nuclear decommissioning 7056, 7065, 7069–7070, 7072–7076, 7079–7080
  - cost estimates 7072
  - decontamination methods 7074
  - dismantling and removing buildings 7075
  - equipment 7074
  - final inspections 7079
  - general methodologies 7069
  - groundwater restoration 7070
  - performance assessment 7073



- reclaiming disturbed land 7080
- remediating residual radioactivity 7076
- safety 7073
- site characterization 7070
- status of decontamination 7080
- surveys 7079
- total costs 7073
- waste management and disposal 7065
- nuclear design calculation 3810
- nuclear disaster 3862
- nuclear donor cell 6166
  - sources 6166
- nuclear energy 3555, 4050–4052, 7051, 7087, 8598, 8601
  - electric generation 7087
  - GEN-IV 4052
- nuclear envelope breakdown (NEBD) 6165
- nuclear explosive 7087, 8585
- nuclear facility 7055, 7057–7058, 7070–7071
  - decommissioning 7055, 7058, 7070, 7071
  - decontamination 7058, 7070
  - dismantlement 7058, 7070
  - types 7058
- nuclear fission 7087, 8603, 11202
  - power plants 7054, 7086, 7087
  - process 7197
  - nuclear fission reactor 7052, 8515
- nuclear forensics 7213
- nuclear fuel 5633, 6691, 7054–7055, 7063–7064, 7142, 7196, 8584, 8593, 8667, 11204
  - back end fuel cycle facilities 7064
  - clad materials 7196
  - cycle 3583, 5574, 6688, 6689, 7054, 7056–7057, 7059–7060, 7064, 7082, 7146, 8426, 8484, 8584, 9443, 11222
    - facilities 7080
    - front end facilities 7060
    - waste storage and disposal 8584
  - disposal 6691
  - enrichment 7062
    - gaseous diffusion 7062
  - fabrication 6691
    - facilities 7063
  - isotope separation methods 5633, 7054
  - management 11203
  - materials 7194
  - operation 6691
  - recycling 7088, 8593
  - reprocessing 7055, 7142, 8584
    - facility 7064, 8667
    - plant 8503
  - resources 11204
- nuclear fusion 7055, 7156–7158, 7162, 7164–7165, 7167–7170, 7175–7177, 7179
  - cold fusion 7170
  - compact toroids 7165
  - confinement systems 7168
  - electrostatically plugged cusps 7168
  - field-reversed configuration 7167
  - hypervelocity impact fusion 7175
  - inertial confinement fusion (ICF) 7170
  - inertial electrostatic confinement (IEC) 7169
  - levitated dipole experiment 7169
  - magnetized target fusion (MTF) 7168
  - muon-catalyzed fusion 7170
  - of hydrogen isotopes 7157
  - open magnetic confinement 7168
  - plasma focus 7168
  - plasma physics theory 7176
  - polywell 7169
  - pulsed, high-density fusion 7168
  - reaction 7157
  - reactor
    - design 7177, 7179
    - requirements 7158
  - reversed field pinch 7164
  - RF plasma confinement 7169
  - rotating plasmas 7168
  - stellarators 7164
  - tandem mirror 7168
  - technology issues 7176
  - tokamak 7162
- nuclear gauge 8523
- nuclear generation 12188
- nuclear genome transformation 365
- nuclear industry 7053, 11221
  - uranium 11221
- nuclear magnetic resonance (NMR) spectroscopy 6078
- nuclear material 7202–7206, 8497
  - accidents 8497
  - accounting 7204
  - control measure 7202
  - destructive analysis 7205
  - key measurement points (KMP) 7205
  - mass spectrometry 7206
  - material balance areas (MBA) 7205
  - measurement technology 7204, 7205
  - nondestructive assay 7206
  - technologies for safeguarding 7203
- nuclear maturation 6163
- nuclear medicine 4908, 7052, 8561, 8580, 8587
  - radionuclide 8523
- nuclear power 209, 4770, 7138–7139, 7180–7181, 8585, 8981, 12120
  - economics 7055, 7180
  - facilities 7184
    - leveled costs 7184
  - financial viability 7181
  - future 7138
  - generation 8482
  - industry 8583, 8598
  - new nuclear installations 7139
  - occupational exposure 8585
  - plant 7052, 7063, 7080, 7182–7183, 7186–7191, 7195, 8484, 8587, 11223–11224
    - buying nuclear fuel 7187
    - cooling water 7187
    - cost comparisons 7191
    - costs and their uncertainties 7189
    - decommission costs 7186
    - discount 7190
    - enrichment 7187
    - estimating uncertainties 7188
    - external costs 7191
    - financial risk 7182
    - fuel fabrication 7187
    - interest rates 7190
    - interim spent fuel storage 7188
    - life-cycle cost 7183
    - operating costs 7186
    - power facility construction 7186
    - routine operational releases 8484
    - spent fuel disposal 7188
    - spent fuel recycle 7188
    - waste management 11224
  - production 7186
    - capital costs 7186
    - cost calculations 7186
  - reactor 7087–7090, 7094–7097, 7099, 7101–7103, 7107, 7109, 7111–7112, 7114, 7120–7123, 7125–7131, 7133–7136, 8583, 10998
    - advanced boiling-water reactors (ABWR) 7131
    - advanced CANDU reactor (ACR) 7133
    - advanced heavy water reactor (AHWR) 7134
    - advanced light-water reactor 7127
    - advanced reactors 7127
    - boiling-water reactor 7096, 7109
    - CANDU reactors 7109
    - classifications 7089
    - control 7094
    - design 7090
    - design-basis accidents 7121



- emergency core cooling systems (ECCS) 7122, 7128
- energy sources 7121
- European pressurized-water reactor (EPR) 7133
- fast breeder reactors 7103
- fast-neutron reactors 7135
- gas-cooled fast breeder reactor (GCFBR) 7109
- gas-cooled fast reactors (GFR) 7136
- gas-cooled reactors 7101, 7129
- generation IV nuclear reactors 7135
- generation-III reactors 7131
- heavy-water reactors 7099, 7133
- high-temperature gas-cooled reactors 7134
- lead-cooled fast reactors (LFR) 7136
- light-water graphite reactors 7102
- light-water reactors 7095, 7131
- liquid-metal reactor 7130
- maintenance 7114
- molten-salt breeder reactor (MSBR) 7109
- molten-salt reactors (MSR) 7136
- operation 7090, 7109
- operation features 7112
- plant control systems 7120
- postaccident radioactivity removal 7123
- power reactor inherently safe module (PRISM) 7130
- pressurized-water reactor 7097, 7111
- quality assurance (QA) requirements 7126
- refueling outages 7112
- safety 7094, 7121, 7125
- safety systems 7122
- shutdown 7111
- sodium-cooled fast reactors (SFR) 7136
- supercritical water-cooled reactors (SWCR) 7136
- systems 7095
- thermal design 7094
- very high-temperature gas reactors (VHTR) 7136
- worldwide perspective 7107
- stations 9766
- nuclear proliferation 7210
- nuclear radiation 5561
- nuclear reaction 3790, 3796, 5567
  - neutron-induced 5567
- nuclear reactor 209, 7054, 7056, 7057, 7149, 7150, 7193–7194, 7199, 8539
  - accident 8465, 8498, 8616
  - for propulsion 8539
  - fuel 7054, 7193–7194
  - materials 7054, 7193–7194, 7199
    - coolant materials 7198
    - moderator materials 7197
    - structural materials 7199
    - neutron poison materials 7199
  - operations 8482
- nuclear regulatory commission 8592
- nuclear reprocessing 7143–7144, 7146–7147, 7149–7150, 7160
  - advanced aqueous separations process 7146
  - aqueous reprocessing 7143
    - equipment 7147
  - aqueous separation technology 7144
  - centrifugal contactors 7149
  - COEX™ process 7147
  - columns 7147
  - liquid–liquid extraction 7143
  - magnetic confinement 7160
  - process technology 7150
  - PUREX process 7144, 7146
  - pyroprocessing 7150
- nuclear reprogramming 6158, 6170, 6172
- nuclear safeguards 7054, 7201–7203, 7215
  - historical development 7202
  - nondestructive measurement technology 7203
  - nonproliferation policy 7202
- nuclear safety 3543, 7053
- nuclear security programs 7203
- nuclear smuggling 7212–7213
- nuclear spectroscopy 3803
- nuclear steam-supply system (NSSS) 7099
- nuclear submarine accidents 8512
- nuclear technology 4906, 7202, 8388, 8426
- nuclear terrorism 7203, 7212, 7214
- nuclear test/testing 3540, 3541, 7202
  - grounds 8492
  - potassium fertilizer treatment 3541
  - remediation 3540
- nuclear transfer (NT) 6150–6152, 6154, 6155, 6165, 7217–7222, 7226, 10820
  - basics 7221
  - cell-cycle coordination 6165
  - cell-mediated transgenesis 7220
  - cloning animals 7218
  - direct transgenesis 7220
  - efficiency 7226
  - embryo development 6151
  - enucleation methods 6155
  - experiments 7218
  - from somatic cells 7220–7221
- gene targeting 7222
- in mammals 6152
- maturation-promoting factor (MPF) 7221
- microinjection 7219
- micromanipulator 6154, 7221
- production of transgenic animals 7218
- techniques 6154
- with differentiated cells 7222
- nuclear transformation 2600
  - consequences 2600
- nuclear transgene 2600
- nuclear transgenic plants 8062
- nuclear waste 4775, 7071, 7139, 8592, 8602, 10423, 11608
  - disposal 8591
  - long-term management 7139
  - repository 8592
  - storage tanks 8602
  - environmental contamination 8637
- nuclear weapon 3531, 3803, 7051, 7054, 7087, 7182, 7201, 7210–7211, 8452, 8488–8490, 8529, 8531, 8601, 8625, 8585–8586
  - accidents 3533, 8505
    - broken arrow 8505
  - characteristics 8488
  - detonations 8496
    - atmospheric 8490
    - exoatmospheric 8490
    - underground 8490
    - underwater 8490
  - explosions 8637
  - environmental contamination 8637
  - fallout 8541
    - structure shielding 8541
  - fission-based 8489
  - fission yield 8585
  - fusion yield 8585
  - hydroacoustic monitoring 7211
  - materials 7201
  - open source information 7210
  - physical designs 8490
  - radioactive wastes 8586
  - reduction 8531
  - satellite imagery 7210
  - seismic monitoring 7211
  - technology 7202
  - terrorist weapon 8529
  - test/testing (NWT) 3547, 7018, 8389, 8469, 8488, 8492–8493, 8598, 8635, 8662,
    - anthropogenic disturbances for biodiversity 8492

- thermonuclear fusion based 8489
  - uranium 8625
  - nuclear-powered vessel accidents 8509
  - nucleating agents 11601
  - nucleation 117
    - scavenging 630
    - theorem 119
  - nucleic acid 1653, 8065
  - nucleophile 3660
  - nucleoprotein (NP) 2971
  - nucleoside 7385
    - reverse transcriptase inhibitor (NRTI) 5010
  - nucleosome 3604
  - nucleotide instability (NIS) 3607
  - nucleus mass number 3790
  - nuclide 5560
  - Nud* gene 2706
  - nudation 3281
  - nuisance effect 426
  - null allele 2552
  - null flux
    - configuration 6250, 6258
    - loop geometries 6250
  - numerical weather prediction/forecast 5071, 5081, 12063, 12068, 12074–12075
    - ensemble forecasting 12074
    - models 12069
    - nonhydrostatic dynamics 12075
    - parameterizations 12068
    - remote satellite observations 12074
    - scalable dynamical cores 12075
  - nutrient 1103, 1677, 1682, 1683, 1690, 3708, 3769, 3774, 3776, 3782, 4554, 7678
    - adsorption isotherms 7678
    - bioavailability 1690
    - calculations 9042
      - modeling 9042
    - certificate 9027, 9038–9040, 9041, 9045, 9046
      - authentication 9039
      - bankable and trading value 9046
      - buildings 9045
      - categories 9041
      - contents 9040
      - industry labeling 9041
      - material composition 9040
      - material functions 9041
      - material-defined pathways 9041
      - proprietary information 9041
      - risk management features 9046
      - security of supply 9039
      - transition mechanism 9039
      - value partnerships 9039
    - deficiencies 1683
    - facultative 1682
    - from the soil 3769
    - humic substances 1103
    - in plant tissue 3774
    - law of the minimum 3776
    - leaching 5828
    - movement 3782
    - phloem-delivered 4554
    - recovery 557
    - trading credits (NTC) 551, 9118
    - transfer 3782
      - through animals 3782
  - nutrition 10752, 10888–10889
  - nylon 8829, 8831
    - depolymerization 8831
    - recycling 8829
    - solvent extraction 8831
- O**
- oarweed 518
  - obesity 3591, 10646, 10654
  - object tracking 61
  - objective sleepiness scoring (OSS) 3119, 3129
  - observability matrix 3059
  - obstacle 78–79
    - fixed 79
    - L-shaped 78
    - moving 79
    - new 79
    - unknown 79
  - obstruction of the sky 11383
  - occidental building 3693
  - occupational exposure to chemicals 222
  - Occupational Safety and Health Administration (OSHA) 7826
  - ocean/oceanic 2458–2459, 2501, 2514, 2523, 3232, 3296, 3316, 3575, 3579, 4569, 4909, 4920, 5047, 5856–5858, 5865, 5871–5872, 5874–5875, 6179–6180, 6184, 6186, 6188–6189, 6196–6197, 6346–6347, 6372, 6372, 6375, 6378–6379, 7229–7230, 7232, 7233, 7239, 7243–7244, 7246, 7249, 7260, 7263, 7267, 7279, 7282–7284, 7293, 7296–7299, 7302, 7328, 7329, 7333, 7337–7341, 7343–7344, 7347, 7348, 7349, 7354, 7356, 7360–7361, 7367–7368, 7371, 7378–7379, 7382, 7384, 7396, 8389, 8919, 9156
    - acidification 2501, 6180, 6375, 7229–7230, 7279
      - biological effects 7234
      - calcifiers 7236
      - chemical changes 7233
      - elevated CO<sub>2</sub> 7235
      - geographic variability in pH 7237
    - metabolic considerations 7235
    - upwelling 7238
  - altered circulation 7233
  - anthropogenic forcing 7283
  - anthropogenic inputs 7347, 7354
  - anthropogenic transgressions 6197
  - atmospheric input 7333, 7339, 7348
  - atmospheric particulate concentrations 7360
  - basins 5869
    - near-rectangular geometry 5869
  - basin-wide monitoring 5875
  - biodiversity 6196
  - biogeochemical considerations 7232
  - biogeochemical cycle 7367
  - biogeochemical processes 7367
  - biogeochemical signatures 7279
  - biogeochemistry 3296, 6372, 7271, 7279
  - bloom 2776
  - bottom pressure (OBP) 4568, 4577
  - carbon dioxide concentrations 6373
  - carbon model 7378
  - chemical distributions 7343
  - chemicals 7361
  - chemistry 7329
  - circulation 4565, 7343, 7373, 10662
    - isopycnal coordinate system 7373
    - topographic effects 7373
    - tracers 7343
  - color 3232, 8923–8924, 8958, 8962
    - algorithms 8962
    - sensors 8924
  - color remote sensing 8954, 8960, 8962, 8966, 8968–8969
    - atmospheric correction 8960
    - biological oceanography 8966
    - chemical oceanography 8969
    - environmental monitoring 8969
    - harmful algal blooms (HABs) 8969
    - ocean physics 8968
  - concentration of CO<sub>2</sub> 7230
  - contaminated with PCBs 6189
  - conveyor 5859, 8680
  - currents 6347
  - cycling
    - of chemicals 7340
    - of organic chemicals 7356
  - deep circulation 5856
  - deep conveyor belt circulation 7344
  - deep water 5857
  - denitrification 6378
  - distribution of evaporation 7249
  - drilling program (ODP) 6417
  - dynamic topography 4577

- ecological stresses 6179
- economy 7384
- ecosystems 2068, 3579
- energy 6346, 7242–7244
  - technologies 7244
- engineering 7298, 7396
- evaporation 3232, 7244, 7256, 7260
  - precipitation regimes 7256
- exclusive economic zones (EEZs) 7243
- export of particulate material 7337
- farm technologies (OFT) 585, 588
- farming 7263
- fate 7328
- fertilization 4108, 4113, 7267
- floor 6410
  - “cold seep” locations 6410
- forecast models 7293
- general circulation models (OGCM) 4916, 7365, 7367, 7371–7373, 7379
  - horizontal grid system 7371
  - simulation of marine ecosystem 7379
  - sub-grid scale parameterization 7373
  - vertical coordinate systems 7372
- geochemical cycling 7361
- global overturning circulation 5865
- global thermostat 6180
- health 2264, 2267, 6193, 8922
  - early warning systems (OHEWS) 2264
  - habitat destruction 6193
  - sentinels 6193
  - warning systems 2267
- heat content 2523, 4909, 4920, 4924, 5872, 5874
  - monitoring 4924
- heat reservoirs 7252
- heat transports 4921
- heating term 7371
- human bacterial diseases 5047
- hybrid coordinate ocean model 7301
- hydrocarbon investigation (OHI) 3554
- hydrological cycle 7246
- information 7282
- infrastructure 7284
- input
  - from the sediments 7339
  - from hydrothermal vents 7338
  - from the terrestrial environment 7337
- invasive species 6184
- iron fertilization (OIF) 7270–7271, 7276, 7277, 7279
  - as a geoengineering tool 7276
  - dissolved oxygen 7279
  - efficiency 7276
  - potential side effects 7277
- kinetic energy 7368
- mankind’s global footprint 3575
- man-made radioactivity 8389
- mass gains 4563
- mass redistribution 4569
- meridional overturning 5856
- mesoscale eddies 7368
- model 3212, 7369, 7370, 7371, 7373–7375, 7377
  - atmosphere model 7369, 7374
  - biogeochemical cycle modeling 7377
  - Bjerknes–Wyrтки model 7374
  - boundary conditions 7370
  - Cane–Zebiak model 7374
  - computational fluid dynamics (CFD) methods 7369
  - equations of motions 7370, 7373
  - Gill-type model 7375
  - hydrostatic primitive equations 7369
  - sea surface temperature (SST) 7371
- mooring 7287, 7302
- nitrogen 612
  - fixation 6378
- observation data 7368
- observatories 3232, 7282, 7291, 7293
  - data-centric cyberinfrastructure strategy 7291
  - information systems 7291
  - micro electro-mechanical systems (MEMS) chip technologies 7293
  - Ocean Observatory Initiative (OOI) 7291
- observing network 7282, 7285, 7286, 7289
  - high frequency radar 7286
  - platforms available 7285
  - propeller-driven AUVs 7289
  - satellites 7285
- oceans and human health (OHH) 2259, 7383
  - economic impacts 7383
  - programs 2259
  - social impacts 7383
- organic chemicals 7337, 7340
- organic contaminants 7360
- osmotic gradients 6347
- overturning circulation 5857–5858
- pollutant elements 7361
- pollution 6188
- precipitation 7244
- predatory species 6186
- radiocarbon data 8657
- remote sensing applications 8919
- research plan 2262
- riverine inputs 7339, 7348
- role of iron 6379
- salinity 2140, 2514, 5872
  - anomalies 2140
- science community 7293
- sea-level change 7379
- sentinel species 9156
- sequestration 4121
- simulations 7379
- sinking particles 7343
- surface mixed layer 7371
- sustainable aquaculture 7263
- temperature 2459, 4909, 4911, 4916, 4917, 4922, 4924, 6180
  - abyssal 4922
  - acoustic measurements 4924
  - Argo system 4913, 4924
  - changes 4917, 4922
  - decadal changes 4922
  - fields 4911
  - geothermal heat flux 4922
  - gradients 6347
  - interpolation methods 4916
  - satellite altimetry 4924
  - surface mixed layer 4911
  - thermometers 4911
- thermal energy conversion (OTEC) 7296, 7297–7298, 7300, 7302–7303, 7305, 7310, 7312–7313, 7315–7316, 7318–7320, 7323–7324
  - capital costs 7324
  - challenges 7302
  - closed-cycle OTEC (CC-OTEC) 7297, 7310, 7311
  - closed-cycle 7310
  - cold water pipe 7318
  - control parameters 7312
  - design environment 7313
  - economics 7323
  - electrical interface 7315
  - environmental impact 7303
  - experimental apparatus 7300
  - history 7297
  - hybrid cycle 7298
  - inspection, maintenance, and repair (IM&R) 7319
  - log-mean-temperature-difference (LMTD) 7312
  - moored OTEC configurations 7312
  - open-cycle 7305, 7306–7307, 7309–7310

- plants 7302
- power cycle 7313
- seawater components 7316
- site selection criteria 7319
- submarine power cable 7319
- technical limitations 7302
- thermal resource 7243, 7297, 7299, 7320
- thermohaline circulation 7341
- uptake
  - of anthropogenic CO<sub>2</sub> 7239
  - of carbon dioxide 5871
- warming 2458
- water 6181, 7341, 7348–7350, 8963
  - aluminium cycling 7348
  - bio-optical modeling 8963
  - cadmium cycling 7349
  - column distributions 7360
  - iron cycling 7348
  - lead cycling 7350
  - manganese cycling 7348
  - measurement of salinity 6181
  - mercury cycling 7350
  - quality 8928
  - silver cycling 7350
  - sinking 7341
  - upwelling 7341
  - zinc cycling 7349
- wind-driven circulation 7341
- wind-driven Ekman transport 5874
- zonal flows 5865
- ocean–atmosphere
  - composition model 9804
  - coupling 7258–7259, 9808
  - interactions 3213
  - system 2127, 2129
- ocean-ranching 10326
- oceanographic
  - data 1944
  - modeling community 8670
  - satellite sensors 8932
- oceanography 2457, 4911, 4916, 8966
  - GCM codes 4916
  - ocean color remote sensing 8966
- OceanSITES network 5876
- octahedral lithium 7539
- octanol 7357, 10659, 10969
- octanol–water partitioning coefficient 4850, 10969
- octocoral 2498
- octopine 10677
- ocular neoplasms 11402
- odd oxygen 10130
- OECD–baseline scenario 1557, 1559
- O.E.T. Calusco process 1527
- off-bottom offshore cultivation 517
- off-road vehicle 3393, 5083, 5085, 5088, 5089, 5092
  - application 5092
  - heavy-duty applications 5088
  - HEV architectures 5085
  - hybrid electric technology 5083
  - hydraulic systems 5089
  - hydraulic technology 5083
  - military 5092
  - scraper/bulldozer 5092
- offshore
  - aquaculture 514, 522–523, 528, 559, 7265
    - biological studies 522
    - feasibility study 528
    - one-step cultivation 522
    - physical and technical studies 523
  - collector 521, 7437
    - internal electricity grid 7437
  - co-management 527
  - drilling 6404, 6406
  - electricity system 7439
  - farming 523, 3558, 6760, 6765
  - hydrocarbon industry (OHI) 6405–6406, 6408, 6411, 6413, 6415–6416, 6418, 6420–6421
    - drilling 6418
    - fish protection by pipelines 6420
  - geophysical data 6413
  - history 6406
  - impact of platforms 6421
  - mapping 6416
  - marine fauna 6408
  - observations along pipelines 6418
  - pipeline routes 6416
  - platforms 6415
  - pollution 6416
  - predrilling 6411
  - production drilling 6418
  - seafloor processes 6411
  - macroalgae growout 6764
  - oil platform 6765, 7396
  - polyculture 8203
  - ring 521
  - substation (OSS) 7437
  - wave 7406
  - wind data collection 7400
  - wind energy 7243, 7265, 7393–7394, 7422
    - capital costs 7422
    - economics 7422
  - wind farm 521, 514, 6594, 6765, 7397
  - wind parks 7440
- wind power 7425–7426, 12215
  - connection to shore 12215
- wind power plant 4478, 7423, 7429–7433, 7435–7437, 7439–7442, 7444
  - availability 7441
  - average cost 7423
  - barriers of water flow 7432
  - benthic fauna and flora 7432
  - connection to Shore and Offshore Substation 7439
  - current 7431
  - economy 7444
  - environmental conditions 7442
  - environmental impact 7432
  - external conditions 7429
  - feed-in tariffs 7423
  - fish 7432
  - fixed charge rate (FCR) 7423
  - floating foundations 7437
  - foundations 7435
  - gravity-based foundations 7435
  - high voltage direct current technology 7439
  - impact of electromagnetic fields 7432
  - installation 7440
  - jacket structures 7436
  - leveled production costs (LPC) 7444
  - line commuted converter 7439
  - magnetometric investigations 7429
  - marine Spatial Planning 7431
  - monopile foundations 7436
  - reliability 7441
  - renewable energy certificates (RECs) 7423
  - renewable portfolio standard (RPS) 7423
  - sea ice 7431
  - sea mammals 7433
  - soil conditions 7429
  - tidal effects 7431
  - tripod foundations 7437
  - visual impact 7432
  - water depths 7430
  - waves 7431
  - wind conditions 7430
- wind resource 7397, 7400
  - land/sea breezes 7400
- wind turbine 7243, 7394, 7400, 7402, 7404, 7406, 7413–7415, 7417–7418, 7420, 7427, 7433
  - ancillary components 7415
  - breaking waves 7404

- components 7413
- currents 7406
- design 7420
- doubly fed induction generator (DFIG) 7415
- drivetrain 7414
- electrical transmission system 7418
- environmental aspects 7420
- external design conditions 7400
- extreme waves 7404
- floating support structure 7417
- gearbox 7414
- high-voltage direct current (HVDC) 7420
- installation 7420
- main components 7394
- materials 7418
- rotor–nacelle assembly (RNA) 7413
- safety regulations 7427
- soils 7406
- support structure 7415
- technology 7433
- tension leg platform (TLP) 7417
- waves 7402
- wave forces 7406
- wind/wave correlations 7404
- wound rotor induction generators (WRIG) 7414
- Ohmic polarization 744
- Ohmic resistance 2944
- Ohm–Kirchhoff law 9129, 9136
- Ohm's law 9136
- OIF 7276
  - evaluation 7276
- oikosteges 4701, 4705, 4737, 4742, 4751
- oil 3845, 4550, 6245, 7446, 7448–7450, 7453, 7474, 7493–7494, 7497, 7798, 7802, 7805, 8085
  - circuit breakers 3002
  - competition” crisis 6245
  - consumption 1022, 10487
  - crisis 6245
  - crops 11438
  - deepwater exploration 7450
  - field 5220
  - geologic occurrence 7449
  - global resources 7446
  - grain quality 4550
  - in conventional fields 7449
  - interaction with light and electronic waves 7493
  - mining 7809
  - mobility 7805
  - pipelines 6418
  - pollution 7516
  - Oil Pollution Act 7826
  - satellite monitoring systems 7516
  - purification 8085
  - price 1563
  - production 1218, 7818
    - pressure pulsing technologies (PPT) 7818
  - recovery 7798, 7807, 7815, 7819, 7827
    - by retorting 7474
    - chemical flood recovery methods 7807
    - combustion processes 7815
    - gas flood recovery methods 7807
    - microbial technology 7819
    - process wastes 7827
    - processes 7827
    - steam-based processes 7815
  - reflectance 7494
  - remaining resources 7453
  - reserves 10487
  - reservoir 7802
    - beam pumps 7802
    - underground pressure 7802
  - resources 10487
  - sand 7451, 7797, 7804, 7809
    - exploration 7797, 7809
    - production 7797, 7809
  - seed 1218
  - shale 7452, 7457–7462, 7464, 7467–7476, 7481–7483, 7485–7486
    - assay methods 7471
    - bitumen 7470
    - classification 7459
    - combustion 7468
    - composition 7460
    - conversion 7458, 7467
    - direct combustion 7467
    - ex situ technologies 7483
    - Fischer assay method 7472
    - galoter process 7483
    - gasification 7468
    - heat carrier 7482
    - heat transfer 7481, 7486
    - high-temperature pyrolysis 7468
    - in situ technologies 7486
    - kerogen 7461, 7462
    - kerogen material 7458
    - low-temperature pyrolysis 7468
    - mineral matter 7460, 7470
    - mining 7481
    - oil recovery 7458
    - organic matter 7461
    - particles 7485
    - processing 7457, 7481
    - production 7469
    - pyrolysis 7474–7476
    - pyrolysis products 7464
    - research 7486
    - resources 7467
    - retorting oil yields 7473
    - Rock-Eval analysis 7472
    - thermal dissolution 7469
    - thermal effects during retorting 7471
    - thermal efficiency 7483
    - thermochemical-based conversion 7469
    - shortages 7448
    - spectra 7497
    - spill 3232, 7491, 7492, 7511, 8929, 8930
      - countermeasures 7511
      - infrared imagery 8930
      - scene analysis system (OSSAS) 7514
    - spill remote sensing 7491–7494, 7497–7498, 7500–7502, 7504, 7506–7507, 7510–7518
      - atmospheric properties 7493
      - digital photography 7497
      - from satellites 7492
      - GIS databases 7510
      - infrared camera 7492
      - infrared sensing 7498
      - integrated airborne sensor systems 7514
      - interferometric radar 7511
      - laser fluorosensors 7501
      - microwave scatterometers 7511
      - microwave sensors 7502
      - near-IR wavelengths 7498
      - optical sensors 7494
      - radar 7504
      - radar satellites 7516
      - radiometers 7502
      - Raman signal 7502
      - real-time displays and printers 7518
      - routine surveillance 7518
      - satellite remote sensing 7515
      - satellite scatterometers 7510
      - scanners 7497
      - shipborne radar 7507
      - side-looking airborne radar (SLAR) 7506
      - slick thickness determination 7511
      - slick thickness relationships 7512
      - small remote-controlled aircraft 7518
      - specific thickness sensors 7513
      - still cameras 7497
      - surface wave radars 7511
      - synthetic aperture radar (SAR) 7506

- tracking 7517
- ultraviolet sensors 7500
- underwater detection 7517
- video cameras 7497
- video photography 7492
- thickness measuring 7513
  - oil thickness 7513
  - thermal mapping 7513
- under ice detection 7517
- visible indications 7494
- weathering 7493
- well 4332
- yield 7474
- oil-fired power plant 12120
- oil-in-water 7497
  - measurement 7497
- oil-on-water slick thickness 7511
- oilseed 4551, 4556, 4557
  - fatty acid profile 4557
- oily sour wastewater 7831
- old corrugated container (OCC)
  - recycling 8786
- older driver 3135, 3140, 3143, 3145
  - collision risk 3143
  - increased crash risk 3135
  - optical flow information 3145
  - RMS speed error 3140
- oleaginous algae 362
- oleaginous microorganisms 11452
- olefin 3934, 3980, 3988, 7594, 7603, 7605, 7835, 10175
  - enantioselective electrocatalytic epoxidation 7603
  - metathesis 10175
- oleic acid 4557
- oleosome 4556
- OLGA scrubber 1467
- oligoether 6051
- oligomeric perfluorosulfonic acid
  - dispersion 378
- oligomerization 4019
- oligonucleotide-mediated mutagenesis 10771
- oligosaccharides 991
- oligotrophic sea 8925
- olive fruit 2649
- olivine 1912, 1914–1917, 1919–1920, 1922–1923, 1925, 2118, 5131, 6086, 6129, 6143, 7527
  - geopolitical implications 1925
  - grains 1920
  - in biodigesters 1923
  - mine 1916, 1917, 1922
  - phosphate 7530, 7532–7533, 7535–7536, 7538–7539, 7544
  - cathode materials 7527
- data 7536
- diffractograms 7530
- electrochemical and structural 7536
- electrode material 7544
- lattice parameters 7535
- lithium compositions 7533
- miscibility gap 7538
- verification of lithium diffusion 7539
- verification of phase diagram 7532
- reactor 1919
- sand 1923
- weathering 1915
- omega–3 oils 3577
- omega–3 polyunsaturated fatty acids (PUFAs) 838
- omics 3587
  - platforms 11
- omnivores 823
- onchocerciasis 12008
  - control program 12009
  - elimination program for the Americas (OEPA) 12010
- oncogenesis/oncogenic 3258
  - genetic errors 3596
  - mutations 3606
- oncogenes 2588
- oncosis 3161
- One Health Initiative 2263, 9169
- one ocean-one health paradigm 9157
- one-electron transfer 3658
- Online
  - bioreactor systems 1633
  - Mendelian inheritance in man (OMIM) 3609
- onshore wind 12187, 12246
- oocyte 5577, 6162, 7221, 10819, 11033
  - maturation 6154, 7221
- oogenesis 6162, 11033
- ooplasmic reprogramming factor 6164
- opaque2 corn mutant 1693
- open building 6878
- open circuit voltage 7563
- open cooling cycles 9558–9559
- open fireplaces 1360
- open legs search 82
- open net-cage aquaculture 10320
- open ocean 7296, 7333–7334, 7336
  - anthropogenic metals 7334
  - aquaculture 581, 588
  - crustal metals 7336
  - farming sites 6761, 6764
  - characterization 6761
  - selection 6761
- mariculture 3555–3557, 3566, 3575, 3579
  - alternative feedstuffs 3575
- mussel farming 6762, 6765–6766
  - environmental considerations 6766
  - methods 6762
  - multiuse facilities 6765
  - technologies 6762
- transport of chemicals 7333
- vertical temperature distribution 7296
- waters 6760
  - farming 6760
- open office 5333
- open reading frame (ORF) 2698, 2701, 2703, 10832
- open solar flux (OSF) 9800
- open sorptive cooling cycle 9525
- open space 11361
  - development 11366
  - clearance of redundant sites 11366
  - simple clearance 11366
  - planning 11372
- open water
  - cultivation 1935, 9110
  - fish farm 547
- open wet cooling tower 9533
- open-circuit
  - photovoltage 6568, 6571, 6576
  - voltage 742
- open-end drill pipe (OEDP) 4400
- open loop 4150
  - error 57
  - gaze stabilization 56
  - methane refrigeration 3960
  - recycling 2399
- open-pit mine/mining 6634, 6667
- open-pollinated crops 8045, 10725
- open-road tolling (ORT) 5024
- open-top gasifier 1453
- operational cloud observation 9633
- operational farm management 9328
- operational nutrient management system 9328
- operational street pollution model (OSPM) 261
- opiates 10642
- opioid
  - analgesics 10642–10643
  - methadone 10643
  - receptors 10643
- Opisthorchioidea* 12024
- opium alkaloid morphine 6522
- optical/optically
  - air mass 9712, 9721
  - depth 9715

- flow field 3144
- flow information 3145
  - visual processing 3145
- oceanography 8957
- radiation 9674
- stimulated luminescence (OSL) 3027
- optimal power flow (OPF) 9338
- ORACLE system 325
- oral polio vaccine 8146
- oral vaccine 8066
- orange carotenoid protein (OCP) 356
- orbitography 2457
- ordinary polynomials 469
- ore 6667
- organic
  - aerosols 637
  - batteries 4615, 7546–7547, 7549, 7552
    - conjugated polymers 7549
    - definition 7547
    - radical polymers 7552
    - redox polymers 7549
  - carbon (OC) 1913, 10659
    - emissions 11868
  - carbonyl sulfide 130
  - chemicals 10658
  - compounds 2418, 2435, 6987, 11320
    - appendix VIII list 6987
    - leaching 2418
    - nitrogen-containing 2435
  - contaminants 2446, 10143
    - properties 10143
  - crops 10759
    - production 4013
  - electrode-active materials 7549
  - electroluminescence devices (OLED) 7934
  - farming 3780
  - fertilizer 1132
  - fouling 10538
    - index 10540
  - liquid electrolyte (OLE) 6045, 6060, 6063
  - metal species 10052
  - molecule 7556
  - photovoltaics (OPV) 7554, 7556, 7565–7566, 7572, 7576–7579, 7940
    - bulk heterojunction (BHJ) 7566, 7578
    - cell 7563
    - degradation 7577
    - fabrication 7576
    - flexible plastic substrates 7565
    - low band gap polymers 7579
    - operating principles 7556
    - operational stability 7577
    - solution-processed 7566
    - transparent conductive oxide (TCO) 7565
    - vacuum-deposited 7566
    - vacuum-processed 7572
- pollution/pollutant 2502
  - oxidative degradation 7607
  - photomineralization 9572
- Rankine cycle (ORC) 1241, 1267, 1313, 1331, 1332, 1439, 1610, 1611, 4260, 4265–4268, 4271, 4276, 4296, 4303–4304, 4309, 4327, 4353, 8978
  - dual-fluid 4268
  - dual-pressure 4266
  - fluid 4275
  - process 1409
  - recuperated 4265, 4304
  - supercritical 4267
  - temperature cascading 4265, 4303
  - working fluid selection 4268
- semiconductors 7556–7557, 7564
  - photoinduced charge transfer 7557
- solar cell 7553, 7555, 7560, 7564, 7576, 7580, 7934
  - building 7564
  - efficiency 7560
  - photovoltaic power generation 7580
  - tandem cell 7576
- solids 7558
  - photoconduction 7558
- sulfur 2209
- waste 1538, 1579, 2416, 11583, 11675, 11872
  - compound 4958
  - gasification 2416
  - zinc 253
- organically bound tritium (OBT) 10998, 11002, 11021, 11028, 11029, 11036, 11046, 11056
  - adverse health effects 11036
  - current ICRP models 11046
  - definition 11021
  - formation in plants 11002
  - ingestion 11056
- organism 3269, 12294–12299, 12310, 12312
  - aversive locomotion 12298
  - biotransformation 12299
  - circumvention of Target 12312
  - ecological function 3269
  - interoceptive sensors 12297
  - mechanisms of resistance 12295
  - mobility 3269
  - monitoring after contamination 3269
  - perception of environmental gradients 12296
  - resistance mechanisms
    - toxicodynamically derived 12310
    - toxicokinetically derived 12296
  - sensory mechanism 12298
  - sensory neurons 12296
  - target site alterations 12310
  - unavoidable exposures 12298
  - xenobiotics 12294–12295
- organism-radionuclide combination 8438
- organization of the petroleum exporting countries (OPEC) 7447
- organocatalysis 4665, 7604, 7612
- organochlorine (OC) 10667
- organodisulfide 7549
- organogenesis 2606
- organohalogen 1629, 3634
- organophosphate 3631
  - fungicides 2569
  - pesticides (OP) 3260
- organophosphorus contaminants 9568
- Organosolv lignin 1519
- original oil-in-place (OOIP) 7802
- oritavancin 504
- ornamental fisheries 6187
- orographic clouds 9639
- orography 2106, 2352, 11276
- orphan poliovirus 8155
- orthophosphoric acid 3879
- oryzacystatin 4031
- osmoprotectant 5
- osmotic
  - adjustment (OA) 2641
  - pressure 2905, 2916
  - stress 5, 5316–5317
    - effects on crop plants 5317
  - tolerance 5319
- Osmyb4 gene 2652
- osteodystrophy 11414
- osteomalacia 9655
- Ostwald ripening 7716, 7761
- o-toluidine 7595
- Otto cycle 5503, 5512, 11430
  - efficiency 5512
- Otto engine 1460, 5522
- outbreeding 418
- outdoor air pollution 3641
- outdoor pollution 1301
- out-of-step (OOS) relaying 12090
- outside ventilation 10271
- ovary development 2647
- overall thermal efficiency 4260
- overbank sedimentation 3741, 3753



- overcast irradiance 10627
  - overfertilization 3774, 3777
  - overfire air 6451, 6462, 6465, 8363–8364
  - overfishing 2502, 6182, 6195
  - overhead
    - track 7784
    - transmission 12189
  - overlay transmission 12202
  - overliming 974
  - overturning circulation 5866, 5868, 5873
    - conceptual models 5866
    - observations 5868
    - observing system 5873
  - overvoltage 3002
  - ovine lentivirus 2968
  - ovum 6151
  - oxalate 10699
  - oxalic acid 1919
  - oxanthiins 2568
  - oxic groundwater 4777
  - oxidant 5139
    - gases 3641
  - oxidation/oxidative 111, 1240, 3906, 3940–3942, 3946, 3950, 4645–4646, 7588, 10173, 10177
    - catalysts 7588, 7594, 7596, 7606, 7611, 8090
    - for synthesis gas production 7594
    - for the environment 7607
    - inspired by biology 7596–7597
    - polyoxometalates 7612
  - chemistry 7587
    - wastewater treatment 7587
  - definition 7588
  - dehydrogenation (ODH) 7594
  - enzymes 4034
  - H<sub>2</sub>O<sub>2</sub>-based oxidations 3942
  - O<sub>2</sub>-based 3940
  - of alcohols 4645
  - of aromatic alcohol 10177
  - of cyclohexane 10173
  - of cyclooctane 10173
  - of dihydropyridines 4646
  - of hydrogen 3906
  - of methylbenzenes 3941
  - of styrene to acetophenone 10173
  - of sulfides 4646
  - quenching 5203
  - reaction 7588
  - selective 3946
  - stress 4, 3589–3590, 3657–3658, 3660, 3662–3667
    - biomarkers 3664
  - definition 3663
  - environmental sustainability 3667
  - free radical 3660
  - hypothesis 3666
  - non-radical 3666
  - radical-free biology 3665
- oxidation–reduction reaction 3657
- oxide 3889, 3892–3895, 3897, 3906
  - apatite-type 3895
  - Ba<sub>2</sub>In<sub>2</sub>O<sub>5</sub>-based 3894
  - brownmillerite-type 3894
  - CeO<sub>2</sub>-based 3892
  - fuels 8584
  - interconnection 9858
  - LaGaO<sub>3</sub>-based 3893
  - nanoparticles 6574
  - of nitrogen (NO<sub>x</sub>) 11293
  - perovskite-related 3893
  - perovskite-type 3897, 3906
  - proton-conducting 3897
  - ZrO<sub>2</sub>-based 3889
- oxidizing nickelic hydroxide (Ni(OH)<sub>2</sub>) 777
- oxone 7605
- oxyanion from mortars 4872
- oxycodone 10642
- oxy-combustion 9603
- oxyfiring combustion 2151, 2153
- oxygen 207, 612, 1235, 2029, 2953, 3893, 3901, 3905, 3927, 3968, 5227, 6383, 7590, 8232
  - anions 2937
  - biogeochemical cycle 6383
  - concentration in water 2029
  - consumption 3968
  - cycle 5886
  - gasification 5123
  - gas 6383
  - ion transport 2941
  - ionic conductivity 3888, 3893
  - non-stoichiometry 2953
  - overstoichiometry 3905
  - partial pressure 7735
  - production 11348
  - reduction reaction (ORR) 6543, 7701, 7732, 7734, 7736, 7750, 7757, 8208, 8212, 8232, 8269, 8271–8274, 8279, 8282–8283, 8285, 8294, 8340
    - arc-plasma gun technique 8271
    - carbon-based materials 8274
    - face-to-face dicobalt-porphyrins 8273
    - heat treatment 8283
    - heterocycles 4655
    - in acidic media 7734
  - in alkaline electrolyte 8269
  - kinetics 7736
  - measurements 7750
  - metal-containing macrocycles 8279
  - metal-free macrocycles 8279
  - niobium oxide 8271
  - non-noble metal catalysts with molecular centers 8272
  - non-pyrolyzed Macrocycles 8272, 8282
  - oxalate-supported pyrolysis 8282
  - pore-filling method (PFM) 8285, 8294
  - Pt size effect 7736
  - rate-determining step (RDS) 7734
  - rotating disk electrode (RDE) 7734
  - thermodynamics 8212
  - separation from air 2154
  - stable isotopes 5227
  - stoichiometry 2941, 2950
  - transport membrane 3969
  - vacancy 2947
    - concentration 3901
- oxygenated fuel 5492
- oxygenated organic aerosol (OOA) 122
- oxygen-evolving complex (OEC) 7611
- oxygenic photoautotroph 347
- oxygenic photosynthesis 349, 355
- oxynitride 7890, 8270
- oxysulfide 2945
- oxysulfide 7890
- oyster 518, 522, 6765
  - culture 1969
- ozonation 10537
- ozone 176, 180–181, 187, 209, 221, 223, 226, 230–231, 233–235, 261, 300, 310, 313, 613, 624, 653, 663, 668, 3641, 3944–3945, 8349, 8882, 8885, 8897, 9628, 9658, 9661, 9723, 9741, 9810, 10130, 10132, 10135, 10137, 10483, 11152, 11301, 11318–11319
  - atmospheric profile 313
  - chemistry–climate interactions 10135
  - contact tanks 6624
  - depletion 10132, 10133
    - effects 10133
    - middle latitudes 10133
    - potential (ODP) 4271, 5415
    - tropics 10133
  - health effects 226, 230
  - hole 613, 2513, 11416
  - layer 188, 10130–10131, 10134, 11376
    - Chapman mechanism 10131
    - destruction 177
    - Montreal Protocol 10134

- monitoring
    - instrument (OMI) 11151
    - stations 181
  - mortality 231
  - NAAQS 230, 233
  - pollution 11319, 11322
  - recovery 10135, 10137
  - standard 234
  - stratospheric 10130
  - ozone-depleting substances (ODSs) 10130
  - ozone-destroying radicals 10132
  - ozonesondes 9723
  - ozoneolysis 3944, 3950
- P**
- Paal–Knorr reaction 4666
- Pacejka's "Magic Formula" 3056
- pacemaker 6501
- Pacific decadal oscillation (PDO) 2135, 2455
- Pacific decadal variability (PDV) 2135
- packed bed combustion 5305
- packet delivery ratio (PDR) 11562
- paclitaxel 3155, 6525
- pair distribution function (PDF)
  - analysis 6073
- pair production 5561
- paleoclimate 624, 6754, 7276
  - information 2074
  - studies 9803
- palladium 7600
- palmitic acid 4557, 9114
- paludification 2176
- pamaquine 11081–11082
- p-aminobenzoate (PABA) 1710
- panarchy 3351–3352
- panchromatic
  - image information 11121
  - luminance channel 11119
- Panicoideae* 1114
- Panicum virgatum* 1282
- pantothenate 1711
- papaya 4464
  - ringspot-resistant 4464
  - ringspot virus (PRSV) 2566
- paper
  - cables 11167, 11169, 11175
  - recycling 8780
  - sludge ash 4874
- papermaking 8797
- parabola 6033
- parabolic mirror 9590
- parabolic trough 2351, 2385, 7619–7620
  - collector (PTC) 7619–7621, 7622, 7624–7625, 7628
  - absorber (receiver) 7621
- drive Mechanism 7625
  - foundation 7628
  - heat transfer fluid 7628
  - mirror 7621
  - optical efficiency 7624
  - performance properties of receivers 7622
  - pylons 7628
  - solar power plants 7620
  - solar technologies 4244
  - support structure 7625
  - technology description 7621
  - tracking 7625
  - concentrators 9583
- paraffin 7844, 10559
- paralytic
  - poliomyelitis 8142, 8151
  - shellfish
    - poisoning (PSP) 4822, 9083
    - toxins (PSTs) 4821
- parameter-elevation regressions on independent slopes model (PRISM) 8909
- parasite 548, 9089, 12019, 12021, 12040, 12043, 12052–12054
  - acquired by contact 12043
  - control 12052
  - culling 12053
  - detection 12053
  - fish farming practices 12053
  - freezing 12052
  - heating 12052
  - infected seafood products 12021
  - management 12052
  - of marine origin 12019
  - seafood-associated 9089
  - taxonomic research 12054
  - treatment 12053
- parasitic disease 11999
- parasitic infection 12020
- parasitoid 5444
- paratransit 1876
- park 11356
  - design 11356
  - trees 11345
- park-and-ride lot 4952
- parking
  - demand 10930
  - garages 7858
  - policies 10928, 10930
  - space 10929
- Park's transformation 21, 33
- parrotfish 832
- partial differential equation (PDE) 10968
- partial oxidation (POX) 3862, 3883, 3967, 5162
- partial root-zone drying (PRD)
  - technique 9068
- particle
  - accelerators 8581
  - emission 273
  - mass concentrations 11302
  - number concentrations 11303
  - pollution 11304
- particulate
  - inorganic carbon (PIC) 8969
  - organic carbon (POC) 7275
  - organic matter 172, 223, 226, 235, 245, 1391, 8887, 9111, 11293, 11295, 11308, 11320
  - Emission 1391
  - health effects 226
- partitioned aquaculture system 544
- passenger demand 99
- passive cooling 6876, 6882
- passive earth sheltering 4133
- passive geothermal conditioning 4142
- passive geothermal heating-and-cooling system 7631
- passive house 7629–7630, 7632–7633, 7635–7640, 7648
  - air flow 7636
  - airtight construction 7635
  - building energy standard 7631
  - carbon footprint 7639
  - climate-changing opportunity 7632
  - construction methods 7630, 7633
  - cooling 7638
  - dehumidification 7638
  - design 7630, 7633
  - economic sustainability 7639
  - eliminating thermal bridges 7635
  - energy
    - balancing 7638
    - calculation 7632
    - consumption 7638
    - recovery ventilation 7636
    - standard 7630
  - heat recovery ventilators (HRVs) 7636
  - high-performance windows and doors 7637
  - internal heat gain 7637
  - legislative programs 7639
  - monitoring programs 7640
  - planning package (PHPP) 7631, 7638
  - Smith house 7632
  - superinsulation 7633
  - ventilation system 7636
- passive irradiation 8530
- passive smoking 3632

- passive solar architecture 9741
- passive solar building 7641, 7642, 7665
  - concepts 7642
- passive solar design 894
- passive solar facade 3694
- passive solar heating 7640–7644, 7649, 7651–7662, 7664–7665
  - annual heating energy 7655
  - applications by building types 7649
  - architectural integration 7651
  - building 7650
    - applications by climate 7650
    - inappropriate building types 7650
    - new construction 7650
    - renovation 7650
    - types 7643
  - climates 7643
  - design advice 7656, 7660
  - direct gain 7642, 7652
  - fixed shading 7654
  - glazing spacers 7653
  - history 7644
  - in built environment 7640
  - indirect gain 7642, 7656
  - insulation 7649
  - isolated gain passive 7642
  - isolated gain/hybrid 7661
  - mass roof 7658
  - mass solar air systems 7662
  - mass walls 7657
  - no-mass solar air systems 7662
  - principles 7649
  - solar air systems 7662
  - solar insulation 7659
  - sunspaces 7664
  - transparent insulation 7658
  - vacuum glazing 7653
  - windows 7652
    - frames 7653
- passive solar house 7645, 7647, 7648
  - computer models 7647
  - New England salt box 7645
  - reference houses 7647
  - sunspaces 7648
  - Swiss Appenzell House 7645
  - windows 7648
- Passivhaus 7631
- pastoralists 2932
- paternal heterosis 1735
- path choice model 105
- pathogen 3594, 5363, 6605
  - climate warming 5363
  - detection 6614, 8766
    - uncertainty analysis 6614
  - high hydrostatic pressure (HHP) treatment 3594
  - in water 6605
- pathogenesis-related proteins 10697
- pathogen-inducible promoters 10707
- path-velocity decomposition 2478
- pattern harmony 8870
- Pauli exclusion principle 3793
- pavement material 11700
  - recycling 11700
- payback time 1498
- peak
  - ground acceleration (PGA) 3236
  - phosphorus 3783
  - streamflow 2065
- peaking plants 7192, 8982
- peat 2173–2174, 2176–2177, 2179, 2181, 2183, 2186, 2188, 2191, 3846
  - formation 2176
  - future production 2188
  - future supply 2173
  - global resources 2173, 2176
  - occurrences 2177
  - production 2186
  - recoverability 2191
  - reserves 2183
    - classifications 2179
  - resources 2181
- pebble bed modular reactor (PBMR) 4053
- pebble bed versus prismatic 4068
- Pechiney process 1079
- Peclet number 2035
- pedestrian 66, 68, 72–73, 5940–5942, 5948, 6953, 6971
  - automatic gates 5948
  - collision detection system 66
  - crossing regulatory and warning devices 5940
  - crosswalk signals 5941
  - detection 65, 68–69, 74, 6952, 6957, 6967, 6973, 11104
    - automotive millimeter wave radar 74
    - boosted feature-level sensor fusion 6957
    - communication-based 74
    - experiments 6967
    - scenario-driven search 68
    - thermal infrared camera-based 74
    - visible camera-based 74
  - delineation markings 5942
  - movements 5945, 5947
    - fixed barriers 5945
    - moveable barriers 5947
  - protection
- airbag 73
- system 72
- recognition system 6953, 6956–6957, 6961–6962, 6964–6966, 6968
  - constant turn rate and velocity (CTRV) motion model 6964
  - egomotion estimation 6964
  - evaluation of position hypotheses 6965
  - image features 6961
  - Monte Carlo localization (MCL) 6962
  - multi-sensor hypotheses 6962
  - radar features 6961
  - radar preprocessing 6965
  - road course estimation 6968
  - sensor alignment 6957
  - sensor Configuration 6956
  - threat analysis 6966
  - universal transverse mercator (UTM) coordinates 6964
  - threat analysis 6971
  - traffic signal 5940
  - vehicle separation 72
  - visibility 68, 72
  - warning application 6955
    - camera sensor 6955
    - radar sensor 6955
    - warning system 6966, 6972
- pedestrian-light rail at-grade crossing 5939
- pedestrian-only street 7785
- pedestrian-vehicle collision 73
- pedigree-based marker-assisted selection system (PBMAS) 6699
- pedosphere 1103
- pellet 1026, 1070, 1072, 1355, 1365, 1373, 1375, 1397, 1564, 1610, 11791
  - clad interaction (PCI) 7200
  - furnaces 1375
  - machines 1070
  - mill 1070, 1074
  - quality 1072
  - stoves 1376
    - with water jackets 1367
- pellet-chimney stove 1375
- pelletization 1609, 9849
- pelletizing 1067–1068, 1070, 1073–1075, 1085
  - energy consumption 1075
  - pellet mills 1074
  - raw material 1073–1074
- Peltier
  - cooling 9511
  - effect 9511
- Pelton wheel 4321
- pendant sulfonic acid group 6555

- penicillin 499–500
- Penicillium notatum* 499
- pentachlorophenol (PCP)
  - 1636, 4887
- pentaerythritol 6904
- pentaglyme 6049
- pentosane 991
- pentosan 999
- pentoses 982
- peptidic antimicrobial 503
- PERC, see perchloroethylene
- percentage road center (PRC) 3125
- Perchlorate 3637, 10439
- Perchloroethylene 303, 3591
- PERCLOS 3113, 3115, 3129
- PERC 306
- Perdew–Burke–Ernzerhof (PBE)
  - functional 6045
- Perdix perdix* 945
- perennial
  - cropping 1579
  - crops 1139, 1539
  - forage grass 1114
  - grass 1279, 6026–6027
    - nitrogen fertilization 6027
    - rhizomes 6026
  - ice 2762
  - lignocellulosic biomass 1571
  - lignocellulosic crops 1572
- perfluorinated sulfonic acid (PFSA) 6542, 7702, 7757, 8189, 8196, 8209, 8215, 8232
  - containing polymers (PFSA) 8332, 8333
    - equivalent weight (EW) 8332
    - relative humidity 8333
  - durability 6542
  - ionomer membrane 6541
  - membrane 3930
  - proton-conducting 8232
- perfluorovinylether 7704
- perforated city 5840, 5852
- pericentriolar material (PCM) 6168
- peripheralization of the periphery 4941
- periphyton 3272
  - effects of contaminants 3272
- peri-urban agriculture 11370
- peri-urban area 952
- permaculture 8871, 8874
- permafrost 281, 291, 337, 2762, 2764, 2776, 3845, 4577
  - gas hydrates 337
- permanent downzoning 11370
- permanent environmental effect 444
- permanent green space 11366
- permanent magnet 21
  - brushless motors (PMBM) 11528
  - hybrid motor 11531
  - synchronous machine (PMSM) 18, 23, 3392
    - motor drives 23
    - surface-mounted (SM) 23
  - transverse flux machine (TFM) 11549
- permanganate 2447
- permasoft 2764
  - models 2764
- permeable reactive barrier (PRB) 2447, 10407–10409, 10415, 10416, 10418, 10441, 10445
  - application 10418
  - biobarriers 10418
  - combined PRB–phytoremediation systems 10418
  - construction methods 10415
  - cut-off walls 10416
  - deep soil mixing 10416
  - drilling 10416
  - funnel-and-gate system 10408
  - gate structures 10416
  - hydraulic fracturing 10418
  - injected systems 10418
  - jet technology 10416
  - reactive thin walls 10416
  - sustainability 10441
- permeate recovery 2905
- permethrin 10667, 12003
- perovskite 2952, 3893, 3897, 3900, 3902
  - oxides 3900, 3902
    - cathodes 9865
  - structure 3900
- peroxidase activity 4034
- peroxidation 2412
- peroxide 8332
- peroxiredoxin-6 3664
- peroxisome 8047
- peroxy acetyl nitrate (PAN) 11299, 11320
- peroxycarbonate 7897
- peroxycarbonic acid 3942
- peroxynitrite 3665
- persistent bioaccumulative and toxic (PBT) 10658
- persistent contrail cover 662
- persistent organic pollutant 3658, 4883, 7330, 8890, 10155, 10156, 10658, 10661, 10663, 11583
  - chemical classes 10663
  - incineration 10156
  - Stockholm convention 10663
  - vitrification 10156
- personal care products 11912
- personal construct theory 10374
- personal digital assistant (PDA) 8716
- personal rapid transit (PRT) system 1876, 6497, 7777–7780, 7782–7784, 7787–7788, 7791
  - architectural design 7791
  - development 7777, 7780
  - expositions 7784
  - Heathrow airport system 7780, 7788
  - history 7779
  - hospital setting 7791
  - international conferences 7784
  - Morgantown system 7780, 7783
  - programmed modules 7787
  - test tracks 7783
  - US Government participation 7782
  - versus existing transportation 7788
- pertechnetate 8624
- perturbed physics ensemble (PPE) 2102
- pervaporation 995
- pervious pavement 3462
- pest 5438, 5441
  - control 5429, 5431, 5441, 5454
    - sterile insect technique 5454
  - crop resistance 5441
  - density 5435
  - herbivore 157
  - insects 4025
  - invasion 5431
  - numbers 5433
  - populations 5443
    - predator–prey relationships 5443
    - taxonomic adscription 5438
- Peste des petits ruminants (PPR) 5360
- pesticide 1188, 1190, 1192, 2560, 2569, 2578, 2742, 2745, 2750, 3631, 3646, 3270, 5438, 5441, 5448, 10155, 10667, 10758, 12295
  - exposure 3270
  - insect resistance 12295
  - metabolomic investigations 1192
  - problems associated 5441
  - registration 2304
  - resistance 5441
- petrol 267, 5532
  - engine 5522
  - sulfur-free 267
- petroleum 1633–1634, 2176, 2189, 2434, 3844, 7242, 7296, 7797–7800, 7803, 7820, 7827, 7829, 7831, 7844–7845, 10483–10484, 10487, 10526
  - atmospheric distillation 7829
  - coking 7831
  - consumption 7845, 10487
  - dehydration 7829
  - desalting 7829

- diesel fuel 5471, 5473
- energy savings 10526
- exception 3595
- exploration 7797–7799
  - geophysical borehole logging 7799
- gas 7842
- hydrocarbon (PHC) 1629, 1633, 1638, 2434, 10146, 10150, 10151
  - biodegradation 10150
  - bioventing 10151
  - components 7844
  - enhanced bioremediation 10151
  - monitored natural attenuation (MNA) 10150
- industry 7825–7826
  - Clean Air Act Amendments 7825
  - Comprehensive Environmental Response, Compensation, and Liability Act 7826
  - Occupational Safety and Health Act 7826
  - Oil Pollution Act 7826
  - Resource Conservation and Recovery Act 7825
  - Safe Drinking Water Act 7825
  - Toxic Substances Control Act 7826
  - Water Pollution Control Act 7825
- liquid effluents 7844
- pipelines 9337
- production 7797, 7800, 7804, 7822
  - chemical waste 7822
  - hazardous waste 7822
- recovery 7803
- refining 7822, 7827, 7832–7833, 7835, 7838–7839, 7841–7842, 7845
  - alkylation 7835
  - catalyst disposal 7845
  - catalytic cracking 7842
  - catalytic reforming 7838
  - chemical waste 7822
  - coking 7845
  - deasphalting 7839
  - dewaxing 7839
  - environmental control 7822
  - environmental effects 7822
  - fluid catalytic cracking 7832
  - gaseous emissions 7841
  - hazardous waste 7822
  - hydrocracking 7833
  - hydrotreating 7833, 7835
  - isomerization 7838
  - polymerization 7835
  - solid effluents 7845
- reservoirs 4418, 7820
- resources 7242, 7296, 10484
  - toxic component 1634
  - transportation 7827
  - vacuum distillation 7829
  - visbreaking 7831
  - waste 1634
- Pfeiffer complex 8272
- Pfotzer maximum 8474
- P-glycoprotein 3159, 12308
- Phaeodactylum tricornutum* 350, 365
- phagocyte 3664
- phanerozoic 2495
- pharma crops 8045
- pharmaceutical 8032, 8067, 8078, 10534, 11912
  - for animal health 8078
  - industry 6520
  - plant-derived 8067
  - proteins 8050, 8059–8060, 8073
- pharmacology 3253
- phase change direct storage 10566
- phase change material (PCM) 10557, 10560, 10570, 10572
  - high-temperature storage 10560
  - indirect storage 10570
  - macro-encapsulation 10572
- phaseolotoxin 10701
- phaseolus 4032
  - $\alpha$ -amylase inhibitor gene 4032
- phase-pure perovskite 2948
- phase-shifting transformer (PST) 9346
- phasor 12080, 12081
  - data concentrators (PDC) 12083
  - measurement unit (PMU) 10951, 12082, 12084–12087, 12095
    - instrument transformer calibration 12086
    - PMU-only estimator 12085, 12087
- phenanthroline 8277, 8285
- phenodyn 10
- phenol formaldehyde resin 9958
- phenological scale 2545
- phenology 2541, 2544, 2548, 2554, 11395
  - developmental response to temperature 2548
  - sub-models 2554
- phenol 857, 1636, 10667
- phenopsis 10
- phenotype/phenotypic 436, 465–468, 486, 1780
  - interaction term model 466
  - multiple-trait model 467
  - plasticity 463, 466
  - reaction norm model 468
  - selection 418, 6694
- phenotyping 9–10, 2686, 4088, 6437, 6695
  - platforms 10
  - techniques 4088
- phenoxyl radical 7000
- phenylacetaldehyde glycerol acetal 4592
- phenylketonuria (PKU) 1683, 10855
- phenylpropanoid 6522
- pheophytin 1479
- pheromone 5452
- phlogopite 1924
- phononic engineering 9427
- phosphate 4873, 6527, 9027
- phosphate-olivine 7529
  - miscibility gap 7529
- phosphine gas 611
- phosphoenolpyruvate carboxylase promoter 4023
- phosphoenolpyruvate (PEP) carboxylase 1481
  - promoter 4023
- phosphogypsum 3517
- phospholipase D1 gene 2647
- phospholipid 578, 1681
- phosphonic acid 7773
- phospho-olivine 721, 726, 7528
  - binary phase diagram 7528
  - crystal chemistry 7528
  - Gibbs phase rule 7528
- phosphoric acid 7738, 7773, 8188, 8207, 8331–8332
- phosphoric acid fuel cell (PAFC) 3388, 3851, 3867, 3881, 3884, 3930, 7866–7875, 9853
  - anode catalyst layer 7870
  - applications 7875
  - bipolar plates 7871, 7875
  - catalyst decay 7872
  - cathode catalyst layer 7870
  - cell stack assembly
    - components 7869
    - life 7872
  - coolers 7871
  - edge seals 7871
  - electrolyte management 7873
  - electrolyte matrix 7869
  - gas diffusion layer (GDL) 7869
  - movement of acid 7874
  - non-repeat components 7872
  - power plants 7868
  - stationary applications 7866
  - water management 7874
- phosphorus 610, 875, 1601, 3592, 3778, 3911, 6377, 7671, 7677, 7684, 7686, 9829, 10842, 11607, 11894, 11901
  - biogeochemical cycles 6377
  - loading model 1929

- fertilization 2562
- poisoning 3911
- phosphorylation 3604
- photo-allergenic reaction 11405
- photoanode 5165, 7882, 7884
- photoassimilate 2645, 4552
- photoautotroph 823
- photobiological algae system 5117
  - for biohydrogen production 5117
- photobiological effect 11387, 11378
- photobioreactor 350, 363, 5122
- photobleaching 4661
- photocatalysis/photocatalytic 5210, 7882, 9567
  - disinfection 9579
  - fuel generation 7898
  - hydrogen production 7881, 7884–7887, 7890
    - absorption of photons 7885
    - development 7890
    - evaluation 7886
    - experimental setup 7887
    - modification 7890
    - photonic efficiency 7887
    - quantitative measurements 7886
    - quantum yield 7887
  - mineralization 9571
  - process 9565
  - systems 9572
    - true activation energy 9572
  - water
    - purification 9572
    - splitting 7898
- photocatalyst 7882, 7884, 7890, 7891
  - for H<sub>2</sub> production 7884
  - low-dimensional nanostructure 7891
  - nanosize effect 7890
  - porous materials 7891
- photocathode 3025, 5565
- photocell 2826
- photochemical
  - oxidant 209
  - ozone creation potentials 11320
  - pollutants 11307
  - smog 143, 245
  - water splitting 5175
- photochemistry 2644
- photoconductors in electrophotography 7574
- photocurrent 9197
- photodimerization 9662
- photodiode 7907
- photoelectric effect 3804, 5561
- photoelectrochemical water-splitting process 5160, 5164
- photoelectrochemistry 3854
- photo-electrolysis 3414
- photoelectron 5565
- photoemission 4661
- photoexcitation 4661, 6571
- photo-Fenton process 9765, 9575–9576, 9584
  - acidification 9576
- photofermentation 5117, 5119
- photogenerated electrons 7884
- photogrammetry 3171
- photographic image quality 11109
- photography 2618
- photoinhibition 353, 356
- photoinitiated electron collector 5179
- photoluminescence 9397
- photolyase 11396
- photolysis 5194, 9053
  - of acetonitrile solutions 5194
- photometer/photometry 2840, 9713
- photomineralization 9570, 9574
- photomorphogenesis 1705
- photomultiplier tube 3024–3025
- photon/photonic 349, 1977, 1983, 5386, 7554, 8554
  - activation 9572
  - addition 9424
  - cutting 9426
  - deterministic transport theory 8554
  - efficiency 9573
  - photovoltaic stock index 7937
  - radiation 8542
  - shielding 8547
    - buildup-factor concept 8547
- photoneneutrons 8568
- photooxidation of polymers 7577
- photooxidative stress 2627
- photoperiod 2548, 2550, 2552, 2556
  - insensitivity 2550, 2552
  - responsive gene 4076
  - sensitivity 2551
    - genetic regulation 2551
- photopic luminous efficiency function 11101
- photopic vision 3138, 11100
- photo-processing software 8920
- photoprotection 353, 2627, 2650
- photoreactivation 11393
- photoreactor 9570, 9585
  - irradiation way 9585
- photo-realistic rendering program 2821
- photoreceptor 2829
- photorepair 11378
- photorespiration 2624–2625, 2633, 2645
- Photorhabdus luminescens* 4037
- photosensitive ganglion cell 2829
- photosensitivity 11405
- photospace in automotive vision 11104
- photosphere 9800
- photostationary state (PSS) 8885
- photosynthate 2626
- photosynthesis and evapotranspiration model (PnET) 6221
- photosynthesis/photosynthetic(ally) 161, 347–348, 350, 353, 559, 1100, 1105, 1263, 1477–1479, 1482–1483, 2084, 2117, 2495, 2547, 2615–2616, 2618, 2621, 2624, 2643, 2663, 2666, 2687, 3223, 3583, 5174, 5187, 5690, 6373–6374, 6376, 7232, 7234, 7903, 7914, 7916, 7932, 8954, 9714, 9740, 10391, 11002, 11019
  - action spectrum 7903
  - active radiation (PAR) 1482, 2616, 7902, 7904–7906, 7909–7915, 7917, 7919, 7921, 7924–7925, 7927, 9714
    - absorbed by canopies 7921
    - absorption by leaves 7915
    - aerosol loading 7912
    - below the atmosphere 7911
    - calibration 7909
    - definition 7902
    - clouds 7912
    - global shortwave irradiation 7912
    - in water 7913
    - irradiance 7906
    - measurement errors 7910
    - measurement stations and networks 7914
    - measurement 7902, 7904, 7927
    - modeling 7902
    - multidirectional transmission instruments 7924
    - quantifying 7904
    - radiation field inside a vegetation canopy 7919
    - radiation interception 7917
    - radiative transfer in plant canopies 7917
    - relationships between fAPAR and LAI 7925
    - scattering inside the canopy 7919
    - spectral corrections 7909
    - spectral errors 7909
    - techniques for measuring 7906
    - vegetation canopies 7915
    - waveband 7905, 7914
  - activity 10
  - available radiation 8956
  - canopy 2628
  - efficiency 1100
  - in water 7914
  - land-based 2117

- light harvesting 356
- photon flux density (PPFD) 7902, 9714
- process 7555
- radiation (PAR) 2671
- radiation 7903
- tritium 3583, 11002
- photosystem 352, 354, 1479
  - antenna systems 354
- phototoxic reaction 11405
- phototrophic octocoral 2501
- photovoltage 7564, 9197
- photovoltaic (PV) 685, 1977, 1978, 3464, 3695, 5165, 7554, 7932–7933, 7935, 7939–7944, 7959, 7960, 7965, 7968–7969, 8372–8378, 8380–8383, 8985, 9197, 9241, 9394, 9396, 9415, 9432–9434, 9437–9439, 9441–9443, 9446, 9743, 9744
  - annual capacities 8374
  - average cost 7948
  - balance of system 8380
  - carbon footprint 9443
  - CdTe solar cells 7939
  - cell 3855, 6566, 6571–6572
    - conventional p–n junction 6572
  - chalcopyrite compounds 9396
  - chalcopyrite-type compounds 9394
  - commercial thin-film technologies 7939
  - conversion 6572, 9414
    - collection losses 9414
    - losses in semiconductor-based devices 9414
    - net absorption losses 9414
  - converters 6571
  - copper indium gallium sulfur selenide material 7939
  - costs 8381
  - domestic electricity markets 7960
  - downstream processes 9434
  - effect 7936
  - efficiency 9418
  - emerging markets 7965
  - emerging technologies 7940
  - energy 7932
    - payback time (EPBT) 9432, 9439, 9446
  - environmental sustainability 7942
  - feed-in tariff 8377, 8383
  - financial support 8376
  - generators 3466
  - global markets 8374
  - greenhouse gas emissions 9439, 9441
  - harmonization process 9442
  - high-concentration PV system 9437
  - high-efficiency solar cells 7940
  - historical political development 8383
  - industry 7946
    - technology mix 7946
  - life cycle assessments (LCAs) 7933, 9442, 9443
  - market 7933, 7959, 8372
    - economics 8382
  - material science 7968
  - microelectronics 7969
  - modules 9438, 9510
    - balance of system (BOS) 9438
  - national policies 8376
  - operation and maintenance 9434
  - panels 4719
  - policies 7933, 8372
  - power
    - generation 7943
    - plants 8375
  - prices 8381
    - trends 7948
  - products 8381
  - quality assurance 7943
  - recycling 7943
  - research activities 7941, 7943
  - role in general electricity supply 8376
  - rooftop
    - application 9443
    - mounting systems 9438
  - sensors 7907
  - SET-Plan 7944
  - status 7933
  - storage system 7969, 8378
  - system 3697, 7938, 7941, 9549
    - crystalline silicon modules 7938
    - grid 8380
  - thermalization 9415
  - thin-film materials 9394
  - toxic gas emissions 9443
  - upstream processes 9433
- photowatt 9204
- phreatomagmatic eruption 11627
- phthalate 3636, 3638
  - acid esters (PAEs) 10667
- phycocolloid 9112
- phycotoxin 4821, 7388
- phyllochron 2542–2543, 2549
- phylloquinone 1479, 1685
- phyllosecretion technology 8046
- phyllosilicate 4593, 8603, 8606
  - clays 8604, 8614, 8621, 8623
- phylogenetic
  - signal 8438
  - trees 7975
- phylum 2496
- Physcomitrella patens* 356
- physical balancing 12098
- physicochemical conversion 1217
- physiological
  - breeding 8020
  - traits 4075
- physiologically-based pharmacokinetic (PBPK) modeling 3266
- phytase 10747, 10798, 10845
  - pigs 10842
- phytate 1716, 10752
- phytoalexins 10698
  - synthesis gene 10705
- phytochelatin 1190
- phytodegradation 6658
- phytoene 1699, 1716
  - desaturase 1699
  - synthase 1699
- phytoextraction 6658
- phytohormone 2588, 6527
- phytohydraulic 6658
- phytomass 1175
- phytomer 2541, 2542, 2556
- phyto-mining 6642
- phytopathogen 157, 9564
- Phytophthora infestans* 2559
- phytoplankton 1935, 1937, 1963–1964, 2501, 3232, 4830, 5690, 6311, 6375–6376, 6380, 7235, 7268, 7272–7275, 7348, 7913, 8203, 8402, 8922, 8954, 8959, 8964–8965, 11408
  - as biofilter 6311
  - bloom-forming 8964
  - blooms 7272, 7275
    - iron-stimulated 7275
  - carbon 7275
    - fixation 8965
  - growth rate 7274
  - net primary production (NPP) 1937
  - pigment absorption features 8959
  - radionuclide cycling 8402
  - stocks 7275
  - UV sensitivity 11408
  - waveband of radiation 7913
- phytoremediation 1633, 2448, 10152, 10155
- phytosequestration 6658
- phytosiderophore 1712, 1713
  - biosynthesis 1713
- phytotechnology 6658, 6660
- phytovolatilization 6658, 10155
- pica behavior 3625
- picornaviral infection 8142
- Picornaviridae* 8131, 8133, 11988–11989
- picornavirus 8133, 8137
- pig 1764, 7992, 7994, 7996, 7999



- breeding 1764, 7972, 7978–7979, 7981–7986, 7988–7989, 7991, 7994, 8001–8004
  - advanced feeding strategies 7988
  - artificial selection 8002
  - balanced feeding 7986
  - breeding goals 8004
  - co-ancestry management 7984
  - commercial product evaluation 7981
  - deprivation 7994
  - ethical aspects 8001
  - expected conserved diversity 7982
  - genetic improvement 7983, 7991
  - group selection 8001
  - inbreeding 7984
  - indiscriminate crossbreeding 7984
  - integrity 8003
  - marginal diversity 7982
  - mate selection 7984
  - pollution 7985
  - population size 7979
  - production traits 7981
  - reduction of nitrogen emission 7986, 7989
  - relative utility 7981
  - robustness traits 7981
  - selection for robustness traits 7991
- cells 10896, 10917
- coping strategy 7996
- dominance aggression 7999
- effects of chronic stress 7996
- environmental sensitivity 7992
- fibroblasts 10829
- harmful social behavior 7999
- instinctive behavior patterns 7994
- production 1785, 10869
  - ecological footprint 10869
- piglet castration 7999
- pigmentation 11404
- pillared clays 4596
- pilot injection engine 1460
- pinene oxidation 122
- Pinus* spp 3292
- pipeline 3451, 4369, 6404, 6406, 6420
  - drifts of dead fish 6420
  - dredge 3035
  - installations 4370
- piping
  - installation 4369
  - material 4369
- piscicide 547
- piston
  - engine 5502–5504
  - crankshaft 5504
  - four-stroke cycle 5503
  - reciprocating motion 5501, 5504
  - two-stroke cycle 5503
- velocity 597
- pitch
  - axis camera 49
  - rate sensor 86
- pitchblende 6690
- pitched roof 4740
- Pitzer's model 4097
- pixel-level noise reduction 11113
- place dependence 10374
- place identity 10374
- placentomegaly 6157
- Plagiorthidae* 12028
- plague 5361
- Planck's
  - constant 3801
  - feedback 633
  - law 7905
- plane 10984
  - jets 10976
  - plume 10978
- plane-of-array irradiance 9722
- planetary albedo 9710
- planetary boundary layer 5078
- plankton 826, 1964, 3272
  - effects of contaminants 3272
  - fecal pellets 8396
- planning advisory committee (PAC) 12189
- plant 9, 392, 1103, 1129, 1191, 1479, 1484, 1486, 2351, 2540, 2542, 2544, 2564–2566, 2624, 2625, 2574, 2682–2683, 2688, 2691, 2700, 2703, 2725, 2757, 4040, 5317–5319, 5324, 6521, 6523, 6525, 6528, 6530, 6532, 6696, 8024, 9063, 10036, 10042, 10044, 10393–10394, 10671, 10672, 10745, 11395
  - architecture 2703, 11395
  - available nutrients 875
  - available water-holding capacity (PAWC) 9320
  - biodiversity 150
  - biomass 848, 1269, 1486, 9826
  - biotechnology 5456, 6696, 10679
  - breeders 2725
  - breeding 1484, 1691, 2529, 2536, 2677, 4492, 4496–4499, 6700, 8013–8014, 8021
    - alien gene transfer 4497
    - climate change 8013
    - cyberinfrastructure 6700
    - data management 6700
    - eco-tilling 4497
    - improved crop varieties 8021
    - in a changing environment 8014
  - meganucleases 4498
  - new biotechnology approaches 4496
  - synthetic biology 4499
  - tilling 4497
  - tools 10745
  - transformation 4498
    - under a changing climate 8013
- C3 plants 2624
- C4 plants 2625
- canopy 2617
- cells 8060
  - applications 6525
  - cultures 6527
- carbon source 6527
- cell culture 6523
- cloning 2691
- community 3285
- defense 4035
  - secondary metabolism 4035
- density 10044
- development 2540
  - of resistance 2566
- developmental stages 2544
- disease 2559, 2561–2562, 2570, 2577, 2688, 2750, 10695–10696, 10705
  - biological control 2570
  - crop-rotation effects 2750
  - integrated control 2577
  - disease resistance 2700
  - soil amendments 2562
  - sowing practices 2561
- domestication 152, 207
- dry matter 10038
- elevated atmospheric carbon dioxide concentration effects 10393
- fertilization 392
- for pharmacognosy 8024
- functional types (PFTs) 3215
- genetic engineering 6530
- genome 2682, 2691, 10672
- genomics 2529, 2530, 6427, 6532
- glycosylation 8050
- growth 1102, 5316
  - effects of salt stress 5316
  - regulators (PGRs) 6202, 6210
  - system 8045
  - temperature 1102
  - water usage 1102
- growth-promoting rhizobacteria (PGPR) 2574
- hairy root 6523
  - cultures 6523
- improvement 2
- insect-resistant 4040

- interactive effects of increases in temperature 10394
- investment 9066
  - resource acquisition (RLD) 9066
- ionic stress 5317
- ionic tolerance 5319
- macronutrients 7278
- material 2586
- metabolic engineering 6528
- minichromosomes 2607
- molecular biology 2757, 6523
- molecular pharming 2683
  - pharmaceuticals for human health 8058
  - veterinary applications 8073
- morphology 11395
- naming plant parts 2542
- nonhost resistance 2564
- nutrients 1103
- oil 8081–8082, 8084–8085, 8087, 8095
  - biodegradability 8095
  - ecotoxicity 8095
  - extraction 8085
  - fuels 8080, 8083
  - fuel-relevant properties 8085
  - processing 8085
  - purification 8085
  - resins 6919
- osmotic tolerance 5319
- pathogenic bacteria 10700
- pathogens 2559
- pesticide” 2304
- phases 2544
- phenology 3224
- phenomics 9, 2634
- phenotyping 2683
- photosynthetic strategies 1479
- promoters 2596
- protection 1129
- protein supplements 10842
- rectangularity 10044
- research 9
- roots 9063
- salinity tolerance 5318
- salt stress 5324
- secondary metabolism 6521, 6522
  - biotechnological production 6522
- selection 1484
  - of high-producing lines 6525
- self-fertilization 392
- spatial arrangement 10036, 10042
- species for transformation 8044
- systematic phenotyping 9
- taxonomy 3282
- transformation 2585–2586, 2591–2592, 2595, 2682, 8032, 8060, 10695
  - binary vectors 2592
  - promoters 2595
  - vectors 2591
- transgene expression 10671
- tumor 2587
- types of resistance 2565
- under salt stress 1191
- under water stress 1191
- virus infection 2566
- waste 8051
- with novel traits 4521
- plant-based expression systems 8074
- plant-made pharmaceuticals 8067
- plant-produced biologics 8030
- plant–soil ecosystem model 1502
- plasma
  - jet 8099
  - theory 7161, 7176
  - torches 8099, 8103, 8105–8107, 8110
    - furnaces 11588
    - thermal energy 8106
    - water-cooling system 8107
  - treatment 9200
- plasma-enhanced chemical vapor deposition (PECVD) 9242
- plasma-processed hydrogenated amorphous silicon 9248
- plasmaphere 8472
- plasmochin 11081
- plasmodia 11075
- Plasmodium* 6293
  - *falciparum* 501–502, 6299, 11999
  - circumsporozoite protein (CSP) 6299
- plasmonic resonators 9424
- plasterboard 2409
- plastic 2410, 2414, 2416, 8819, 8821
  - calorific value 2414
  - co-gasification 2416
  - deformation 3250
  - lithium-ion battery 6091, 8744
  - litter 9991
  - macro-sorting 8821
  - manufacturing 4852
  - materials 4852
    - hazard characterization 4852
  - near-infrared spectroscopy (NIR) 8821
  - polyethylene terephthalate (PET) 9580
  - recycling 8780, 8819, 8822, 8824–8826
    - air classification 8824
    - centrifuges 8825
- chemical recycling 8826
- density separation processes 8824
- electrostatic separation 8825
- energy recovery 8826
- flotation 8826
- hydrocyclones 8825
- jiggling 8825
- laser aid identification 8822
- magnetic and eddy current separations 8824
- micro-sorting 8822
- selective dissolution 8826
- sink and float process 8824
- X-rays analysis 8822
- solid waste (PSW) 8818
- waste 2414, 4005, 4008, 4011, 9983
  - combustion 2414
  - liquefaction 4005
- plasticity 464, 467
- plastid transformation 2606, 4024, 8062
- plastochron 2542–2544
- plastoquinone 358–359, 1479
  - state1–2 transition 358
- plate heat exchangers 4371–4372
- plate tectonics 4181–4182, 11614
  - spreading centers 4182
  - subduction zones 4182
- platensimycin 500
- platforms 6404, 6406
- platinum 3882, 3979, 7696, 7742–7744, 7746, 8265
  - alloy 7747, 8212, 8265
    - nanocrystal electrocatalysts 7747
  - catalyst 8266, 8295, 8329
  - d-band center energies 7742
  - film electrode 3421
  - loading 7751
  - monolayer catalyst 7742, 7743
  - nanoparticles 3880, 7743
  - nanotubes 7746
    - electrocatalysts 7744
  - nanowire 7744
  - surfaces 7734
    - oxygen reduction reaction 7734
- platinum-based catalyst 7761
  - degradation 7761
- platinum-group metal (PGM) 373, 7757
- platooning of buses 1876
- platyhelminth 12022
- pleconaryl 8135
- pleiotropy 493
- pleistocene calderas 11617
- Plinian eruption 11614
- plow layer 3727
- plowed soil 155

- plowing 3532
- plug flow
  - biogas digester 1153
  - reactor model 2032
- plug-in hybrid electric vehicle (PHEV) 692, 710, 768, 779, 3487, 7847–7849, 7853–7858, 8112, 8113–8115, 8117, 8121, 9293, 10496, 10520–10527, 11508
  - all-electric range (AER) 3479, 8115, 8121
  - blended control strategy 8117
  - charge-depletion range (CDR) 8121
  - daily driving distance 8113
  - demand side management (DSM) 7848, 7857
  - economic feasibility 7856
  - electric demand (load) profiles 10522
  - electricity
    - consumption 10521, 10525
    - generation mix 10525
  - fuel consumption 10521, 10525
  - fuel-cycle pathways 10521
  - generation mix 10523
  - greenhouse gas effects 10520
  - human behavior modeling 7855
  - load profile 10523, 10527
  - mobile decentralized storage 7849
  - modeling 7854
  - motor and battery power 8114
  - new markets 7853
  - operation strategies 8115
  - outage management (OM) 7848, 7858
  - policy strategies 7854
  - power density requirements 3479
  - power system planning 7855
  - share of miles electrified 10526
  - wheel-to wheel results 10524
- plum pox virus (PPV) 10704
- plumbemycin 507
- plume 10976, 10978, 10980, 10984, 10987, 10988, 10990
  - coflow 10984
  - crossflow 10987
  - density 10978
  - effect of boundaries 10980
  - in stagnant environment 10976
- pluripotent cell 10900, 10907
- pluripotent gene 6160
- plus energy building 8375
- plutonium 209, 239, 3534, 3541, 3761, 6689, 7063, 7145, 7195–7196, 7207, 7209, 8388, 8390–8392, 8394, 8398, 8496, 8509, 8539, 8582, 8590, 8593, 8623, 8667
  - chemical forms 8394
  - contamination in soils 8509
  - decontamination 8509
  - in seawater 8392
  - in the sediments 8398
  - measurement 7209
  - oxidation states 8391
  - oxide 3534
  - reprocessing methods 8593
  - speciation 8391
  - use in sediment tracing investigations 3761
- PMSM 34
  - field-oriented control 34
- Pneumocystis carinii* pneumonia 4999
- Poaceae* 1109, 1114
- pod car 1876
- poikilotherms 5595
- point kinetics equation 3813–3815
- Poiseuille flow 2922
- poison 3256, 7122, 10636
  - control rods 7122
  - distribution 461, 479
  - potential 6062
- polar
  - amplification 2762
  - circle 9622
  - ecosystems 7236
  - ice mass 282
  - orbiting satellites 8970, 9627, 9749
  - ozone loss 10132
  - satellite constellation 294
  - stratospheric clouds (PSCs) 130, 10132
  - stratospheric ozone 9797
- pole tide 4569
- pole-to-pole observation 284
- polio 8123, 8126, 8128, 8130, 8140, 8149, 8151, 8156, 8162
  - definition 8126
  - disease transmission 8128
  - endgame vaccination strategies 8162
  - epidemiology 8123, 8130
  - eradication 8126, 8151, 8156
  - infections 8128
  - laboratory manual 8151
  - passive immunization 8149
  - vaccine 8126, 8140
- poliomyelitis 8126, 8128–8129, 8141, 8145, 8150, 8157, 11989
  - endemic countries 8150
  - global eradication 8145
  - importation countries 8150
  - mass vaccination trials 8145
  - polio-free countries 8150
  - vaccine failure 8157
- polioviral RNA 8137
- poliovirus 5380, 8126, 8129–8131, 8133, 8135, 8137–8139, 8144–8145, 8148, 8153–8155, 8157, 8161, 11989
  - capsid proteins 8131
  - country-to-country transmission 8154
  - culturing 8130
  - endogenous transmission 8153
  - environmental samples 8155
  - genome 8131
  - immunodeficient patients 8157
  - inactivated 8144, 8148
  - infection 8129, 8136, 8142–8143, 8145, 8149, 8151
    - at the level of the host cell 8136
    - at the level of the individual host 8142
    - effectiveness of vaccination 8151
    - fecal–oral transmission 8143
    - immunization history 8143
    - immunoglobulin 8149
    - in cells, individuals, and populations 8136
    - in populations 8149
    - macrophage migration inhibition (MIF) technique 8145
  - intratypic differentiation 8153
  - mass immunization campaigns 8148
  - misincorporation rate 8139
  - molecular evolution 8141
  - natural infections 8144
  - neurovirulence 8131
  - noncapsid regions 8138
  - non-vaccine 8155
  - person-to-person transmission 8157
  - polyprotein 8133
  - receptor 8135, 8136
    - cloning 8136
    - identification 8136
  - serotypes 8130, 8141
  - transmission 8145
  - vaccine failure 8161
  - vaccine-derived 8135, 8141, 8155
- Polix 9204
- pollen
  - development 2646
  - drift 10724
  - fertility 2646
  - sterility 8018
- pollination 958
- pollinator 10723
  - diversity 157
- pollock fishery 3575

- pollutant 170, 223, 249, 259, 221, 4883, 4894, 4897, 5529, 7822, 7824, 10096, 10979, 11292  
 – average exposure 249  
 – biokinetics 4894  
 – biological monitoring 4893  
 – coal-related 2211  
 – combustion-generated 5529  
 – dietary intake 4897  
 – dispersion 259  
   – in urban streets 11300  
 – emitted by incinerators 4883  
 – emissions 11295  
 – environmental monitoring 4893  
 – environmental regulations 7824  
 – excess morbidity 223  
 – in the atmosphere 11292  
 – mass flux 10979  
 – mortality effects 223  
 – stormwater 10096  
 – transfer 7687, 7688  
   – flooding 7688  
 – transformation 259  
 polluter pays principle 2419, 3445, 4785  
 pollution 388, 535, 7852, 9907, 10486  
 – biological 535  
 – control 3461  
   – best management practices (BMPs) 3461  
 – costs 10486  
 – pollution effect 221  
 – pigs 388  
 – prevention act 10018  
 – redistribution 7852  
 – restrictions 9907  
 – transport 11295  
 poloidal magnetic field 7162, 7166  
 polonium 8462, 8481  
 PolScope 6155  
 poly(2,2'-(1,4-Phenylene)5,5'-Bibenzimidazole) 8180  
 poly(2,2'-(dihydroxy-1,4-phenylene)5,5'-bibenzimidazole) 8185  
 poly(2,5-Polybenzimidazole) 8180  
 polyA trap selection 7223  
 polyacrylonitril 6781, 8283  
 polyamide imide (PAI) 9308  
 polyaniline 7549  
 polyannaline 764  
 polyaromatic hydrocarbon (PAHs) 5531, 10665  
 polyazine bridging ligand 5177  
 polybenzamidazole (PBI) 374, 7767, 7870, 8176–8178, 8183–8184, 8186, 8188–8190, 8209, 8215, 8331  
 – acid-doped membrane 8176  
 – “direct acid casting” (DAC) technique 8177  
 – dynamic durability tests 8189  
 – fuel cell 8173, 8191  
   – combined heat and power (CHP) devices 8191  
 – hexafluoroisopropylidene-containing 8184  
 – membrane 3861  
   – electrode assembly durability 8186  
   – electrode assembly manufacturing 8190  
 – *m*-PBI 8178  
 – PBI-inorganic composites 8184  
 – PBI-PA fuel cell systems 8188  
 – poly(2,5-polybenzimidazole) 8180  
 – segmented PBI block copolymers 8186  
 – sulfonated 8183  
 – synthesis 8177  
 – synthetically modified 8178  
 – *m*-PBI 8178  
 polybrominated diphenyl ether (PBDE) 3275, 10666  
 polycarbonate plastic 3261  
 polychlorinated  
 – biphenyl (PCB) 3632, 4883, 4885, 6189, 6988, 9157, 9167, 10142, 10662, 10665, 10957, 11583  
   – in the marine food chain 9157  
 – dibenzofurans (PCDFs) 6990  
 – dibenzo-*p*-dioxin 4880, 6977, 6990, 6998  
 – diphenyl 5289  
 – naphthalene (PCN) 4883, 4886  
 polyclimax 3284  
 polycrystalline  
 – CdTe solar cells 1992–1993  
 – materials 9197  
 – platinum surfaces 3883  
 – semiconductor 1980  
 – polycrystalline silicon 7959  
   – solar cell 9395  
   – solar cells 7946, 7951  
 polyculture 546–547, 8201, 8203, 9182–9183, 10045  
 – cover crop 151  
 – successes 8203  
 – systems 3581, 6310  
 polycyclic aromatic hydrocarbon (PAH) 855, 880, 1397, 1463, 1636, 1639, 3257–3258, 3594, 3609, 5237, 6987, 8886, 10008, 10662, 11303–11304, 11308, 11321  
 – emissions 11304  
 – long-range transport 11304  
 – sampling artifacts 11304  
 – sources 11304  
 polyetherketone (PEK) 7870  
 polyethylene (PE) 2411, 2413, 7209, 8748, 9582, 9773  
   – oxide (PEO) 751, 6070, 8745  
   – PEO-based polymers 6048  
   – separators 8748  
   – terephthalate (PET) 3453, 4008, 8820, 8842, 9983  
 polyfurfuryl alcohol resin (PFA) 6140  
 polygalacturonase inhibiting protein (PGIP) 10699  
 poly-generating fuel cell 5140  
 polygeneration 1444  
   – plants 2153  
 polygene 6429  
 polygonum 1116  
 polyhydroxy complex 8395  
 poly- $\beta$ -hydroxybutyric acid (PHB) 5387  
 polyimide 1980  
   – ionomer membranes 6555  
 polyketide 6522  
   – antibiotics 505  
 polyline 78  
 polymer  
   – cables 11169  
   – concrete 6278  
   – electrolyte 6070, 6811, 8224, 8720  
   – nanoscale channels 8224  
   – electrolyte fuel cell (PEFC) 3881, 3916, 9853  
   – electrolyte membrane (PEM) 374, 8205, 8207, 8209, 8214–8216, 8224, 8229, 8231  
   – alkaline-based 8216  
   – automotive applications 8231  
   – freezing point 8224  
   – fuel cell 8205  
   – high-temperature 8215  
   – proton-conducting 8209  
   – temperature proton 8214  
   – electrolyte membrane fuel cell (PEMFC) 1414, 3850, 7866, 8174, 8204, 8240, 8249–8252, 8255–8256, 8258–8260, 8265, 8566  
   – alloy catalysts 8256  
   – automotive 8240  
   – bipolar plate targets 8252  
   – cost breakdown 8249  
   – durability 8251

- graphite-based bipolar plates 8260
- highly electron-poor poly (phenylene) backbones 8259
- high-surface-area carbon 8258
- incremental engineering modification of membranes 8259
- membrane targets 8250
- metal separators 8260
- nanoparticles 8256
- non-noble metal catalysts for oxygen reduction 8265
- non-precious metal catalysts 8258
- platinum catalysts 8266
- Pt-alloy 8256
- Pt-based electrocatalysts 8255
- targets of performance and durability 8249
- engineering 7580
- properties 6930
  - castor oil-based 6930
- polymerase chain reaction (PCR) 5384
- polymer/polymeric 377, 2397, 6050–6051, 6550, 6897, 6908, 6924, 6926–6927
  - architectures 6051
  - binders 9308
  - cable 11168
  - composite materials 6897
  - electrolytes 6048
  - in construction and demolition waste 2397
  - from plant oils 6908
  - petroleum-based 6926
  - relaxation 6050
  - SOPERMA-styrene 6927
  - triglyceride-based 6924
  - with sulfonic acid clusters 6550
- polymerization 3945
- polymorphic molecular markers 6693
- polymorphism information content (PIC) 479
- polymorphous silicon 9244
- polymorph 728
- polyolefin 2411, 5247, 8727, 8731, 8746, 8841, 8842
  - recognition-separation 8841
  - recovery 8842
  - resin 8721, 8724
  - separator 8735
- polyose 9825
- polyoxometalate (POM) catalyst 7600
- polyphenol oxidase (PPO) 4034
- poly(phenylene)s 6544
  - ether sulfone 6557
  - ionomers 6546
  - sulfide 8357
- polyphosphoric acid (PPA) 8174, 8177
- polypropylene 523, 8722, 8735, 9582
  - microporous films 8723
  - oxidation 7593
  - separators 8727
- polypyrrole 764, 7549
- polysaccharide 989, 1105, 1678, 9113, 11002
  - extraction 9124
- polysilicate 8395
- polysilicon 7956–7959, 9198–9199, 9201, 9435
  - filaments 7957
  - hyper-pure 7958
  - manufacturers 7957
  - production 7957
    - fluidized bed process 7957
- polystyrene (PS) 3946, 4852, 6927, 8231
- polysulfide 6660
- polysulfone 380
- poly(tetrafluoroethylene) (PTFE) 6539, 7696, 8186, 8209, 8357
- polythionate 6660
- polythiophene 6567, 7567, 7572
- poly(trifluoroethylene) 6539
- polyunsaturated fatty acid (PUFA) 1681, 1696, 4557, 9080
- polyvinyl chloride (PVC) 836, 4006, 4852, 8748, 8820, 8842
  - separators 8748
- polyvinylidene difluoride (PVdF) 6133, 8259
- polyvinylidene fluoride (PVDF) 6511, 9306
- poly(vinylphosphonic acid) (PVPA) 6557
- polyvinylpyridine 6781
- polyvinyltoluene (PVT) 5566
- Polywell 7169
- pond aquaculture management and development (POND) model 1936
- Pontryagin's minimum principle 52
- Pooideae* 1114
- pool heating 4365
- poor air quality 11307
- poplar 1285, 1287, 1293, 1539, 6021
  - as a source of biofuels 1287
- population
  - decline 5839, 5844, 5850, 10357
  - effects on infrastructure 5844
  - growth 2079
- population-level genetic resource management 7983
- Populus* 1285, 6021
- porcine endogenous retrovirus (PERV) 10832
- porcine insulin 8027
- pore water 2766
  - biodiffusion 9141
  - influence of salts 2766
- pork 1751
- porosity 4186
  - matrix-dominated 4186
  - porosity 4186
- porous concrete 3831
- porous silicon (PS) 9207, 9216
- Porphyra* 9114–9116
  - aquaculture 9116
  - genome 9115
- Porphyridium cruentum* 350
- porphyrin molecule 7559
- portable 12-VDC cooker 9496
- portable fuel cells 3916
- portable industrial radiography sources 8519
- Portland cement 2406, 3827, 3830
- position-based routing protocols 11560
- positive breeding values 9365
- positive electrode material 6129, 6142, 6506, 6510
- positive nickel electrode material 6941
- positive train control (PTC) 5967
- positron
  - annihilation photons 8572
  - decay 8564
- possession-tracking mechanism 9043
- post-anthesis water stress 2649
- post-combustion 2210, 4975, 5262–5263, 5273, 6465–6466
  - capture (PCC) 2151, 2152
    - of mercury 2210
  - chamber 4975
  - control technologies 2209
  - of the gas product of volatilization 6466
- postglacial rebound 4579
- postpolio
  - eradication 8160
  - sustainability 8160
  - syndrome 8144
- post-recycling residues 11833
- posttranscriptional gene silencing (PTGS) 2605, 8061, 10673, 10757
- posttranscriptional regulation 7
- potable groundwater 4126
- potable water 2090
- potassium 1104, 3778, 4165, 4180, 7330, 8461, 9829, 11607
  - chloride fertilizer 2563
  - fluoride 4608
    - supported on alumina 4608
- potatoe 4464
  - insect-resistant 4464
  - leafroll virus 10704

- potential coal reserve 2181
- potential energy 8849
- potential of mean force (POMF) 6062
- potential organic fouling index 10539
- potential yield (PY) 2721, 2722, 2733, 2736
  - future progress 2736
  - lifting 2733
  - water-limited 2722
- poultry 401, 407, 413, 1764
  - breeding 407, 1769, 7973, 8307
  - genetics 401 8307
  - meat production 1751, 8309
    - *Salmonella pullorum* 8309
  - production 641
- poverty 1677, 1741
  - abatement 1489
  - alleviation 535, 578
- powder metal fuel (PMF) 11591
- powder neutron diffraction 6072
- powder X-ray diffraction (PXRD) 6070
- power cable system 11164, 11170
- power consumption 12099–12100
- power conversion/converter 3372, 4240, 12148
  - efficiency 7563
- power decentralizing distribution 3464
- power density 3852
- power electronics 12147, 12150, 12166
  - controlled resistors 12166
  - converter 12147
  - equipments 12139
  - inverter 39
- power flow 9340, 9341, 9351–9352
  - angle control 9341
  - as an enabler for improved energy markets 9354
  - between two AC buses 9340
  - DC control 9341
  - dynamic granular control (DGC) 9341
  - emerging technologies 9351
  - impedance control 9340
  - model 12184
  - smart wires (SW) 9352
  - thin AC converters 9352
  - VAR control 9339, 9341
  - voltage control 9341
- power generation 2166, 2172
  - coal-based 2166
  - power generation cycle 1330
  - efficiency 2172
- power grid 10943, 10951, 12080, 12135
  - wide area monitoring, protection, and control (WAMPAC) systems 10951
- power plant 2270, 2349, 2796, 4065
  - coal-fired 2270
  - fossil-fired 4065
  - solar-thermal 2349
- power production 1313–1314, 1438
  - combustion-based technologies 1314
  - with IGCC Processes 1438
- power quality 3017
- power rating 2998
- power shortage 12099
- power station 2207
  - thermal efficiency 2207
- power supply quality 3004
- power switchgear 2999
- power system 2999–3000, 8987, 10940, 10942–10943, 10946, 10953, 12082, 12084, 12090, 12092, 12094–12095, 12099, 12105–12108, 12116, 12123, 12266
  - analysis 10943
  - blackouts 10935
  - busbars 2999
  - capacity credit 12266
  - contingency reserve 12103
  - continuous balancing 12099, 12100
  - control 12094
    - of large oscillations 12094
    - of sustained oscillations 12094
  - disturbance 10940, 10946, 12090
  - electricity markets 12108
  - frequency
    - control 8987
    - instability 10942
  - grounding 3003
  - integrating wind power 12116
  - islanding 10942
  - load following 12108
  - modeling 7855, 7861, 10943
  - monitoring 12084
  - operational reserves 12100
  - permissible frequency range 12106
  - positive sequence measurements 12082
  - primary control 12105
  - production planning 12108
  - reconstruction of events 12084
  - regulating capacity 12099
  - regulation 707
  - reserves 12099, 12103, 12123
  - secondary control 12107
  - speed-droop characteristics 12106
  - state estimation 12084
  - substations 12082
  - switchgear 3000
  - switching apparatus 3000
  - system restoration 12095
  - tertiary control 12107
  - Thévenin impedance 12092
  - voltage control 8987
- power tower 2371
  - hybridization 2371
- power train system architecture 802
- power transfer 12196
- power transportation 11429
- pozzolan 3825, 3827
- Prandtl tip loss factor 12206
- Prandtl's mixing length 2054, 2060
- precipitable water (PW) 9724
- precipitation 2106
  - forecasts 12071
  - parameterizations 2106
- precision
  - agriculture 3779, 5434
  - irrigation 5627
- precombustion capture 2151, 2153
- precrash
  - safety (PCS) 71, 73, 76
  - warnings 3114
- predation 10063–10064, 10072–10073, 10076, 10080
  - feedback loops 10064, 10072
  - frequency-dependent 10076, 10080
  - partitioning 10073
- predation–competition trade-offs 10080
- predator partitioning 10076
- predator 5444, 10075
  - feedback loops 10075
- predator–prey interactions 5450
- prediction experiment 2140, 2143
- predictive emissions monitoring system 183
- pre-erythrocytic 6300
  - vaccines 6301
- preferential oxidation (PROX) 3883
- pregermination 9151
- pregnancy 3628, 3639
  - embryonic and fetal development 3628
  - maternal smoking 3639
- preharvest sprouting (PHS) 9151
- preliminary site assessment 2438
- premature chromosome condensation (PCC) 6165
- prenatal irradiation 5577
- prepared fuel 11802
- presenteeism 10280
- pressure agglomeration 1070
- pressure swing adsorption (PSA) 1052
- pressure-retarded osmosis (PRO) 2916
- pressurized combustion (PC) plant 9930
- pressurized water reactor (PWR) 4906, 7198
- primaquine 11077, 11082, 11084–11085
- primary aerosol formation 111, 115
- primary air distribution system 4960
- primary air flow 4967



- primary battery 741, 746–747
  - solution-precipitation reaction 746
- primary energy consumption in the EU 1314
- primary neutralization 5217
- primary pollutant 248, 7823
- prime power 9916
- primordial germ cell 646, 648, 10907, 10908
  - gene targeting 648
- primordial radionuclide 8656
- principal component analysis (PCA) 8894
- principal nutrient metabolic (PNM) model 11059
- principal organic hazardous constituents (POHC) 6976
  - destruction efficiency 6976
- principal organic pollutant (POP) 5237
- prion disease 2969
- priority strategy 102
- private allele 7976
- proalcohol 1002–1003
- Proalcohol program 1007
- probenazole 2576
- procarcinogen 3256
- process gas 7841
- process gas-heated reforming 3966
- processed refuse fuel (PRF) 11793, 11796, 11818, 11821, 11825
  - heating value 11821
  - power production 11825
  - properties 11818
- processing ash 11754
- processing reactions 5154
  - internal reformation 5154
- producer gas 1214, 1433–1435, 1437–1438, 1441, 1443, 1446
  - cleaning 1441
  - scrubbing 1437
- product
  - branding 8777
  - gas 1459, 1465, 1468
    - application 1459
    - dust removal 1468
    - fuel gas cooling 1468
    - hydrogenation 1465
    - water removal 1468
  - recycling solutions (PRS) 3446
  - of incomplete combustion (PIC) 5237, 5240, 6976, 6992–6993, 7001
    - emissions from full-scale facilities 6992
    - zone theory 6993
- production 5167, 5169
  - costs 5169
  - energy flow 3308
  - nuclear-energy-based 5167
  - of meat 10840
  - thermochemical methods 5169
  - well 4247, 4360
    - calcite scaling 4247
    - in sedimentary basins 4360
- production-carrying capacity 1962, 1964, 1971
  - modeling 1964
- progeny 444
  - testing 400, 401, 476, 2785
- program crop 2743
- programmable logic controller (PLC) 2214
- programmable multispectral imager (PMI) 8929
- progressive harmonization 8867, 8870
- project to intercompare regional climate simulations (PIRCS) 8910
- prokaryotic cyanobacteria 4820
- prokaryotic microorganisms 498
- prolactin receptor (PPLR) 10892
- promoter
  - methylation 2605
  - trap 7223
- prompt fission
  - gamma photons 8571
  - photons 8570
- prompt neutron 8567
  - lifetime 3814, 3815
- pronuclear microinjection 10822, 10824, 10869
- proof-of-payment (POP) fare system 5984, 5987, 5994
- prooxidant 3589, 3667
- propane 334, 3960, 3969
  - deasphalting 7839
  - prechilling 3960
- propanol 4600
- propargyl methanesulfonate (PMS) 6040
- propelling energy 8848
- propene 7590
- propulsion 10543
  - extended constant power range 10543
- propylene
  - carbonate (PC) 3430, 3497, 9309
  - epoxidation 3943
  - oxide (PO) 3942, 7590
- propylene-expanded liquid 3943
- prostate cancer 3637
- proteasome inhibitor 10827
- protectant 2304
  - fungicides 2567
  - plant-incorporated 2304
- protected lithium electrode (PLE) 730
- protegin-1 (PG-1) 2968
- protein 577, 639, 1681, 4033, 4559, 11437
  - analytes 1655
    - direct detection 1655
  - biopharmaceutical 639
  - carbohydrate-binding 4033
  - chains 1567
  - disulfide isomerase (PDI) 3669
  - inhibitors 4031
    - mammalian amylases 4031
  - production 8050
    - environmental impact 8050
  - proteinase inhibitors (PIs) 4029
  - quality 4559
  - synthesis 4559
- proteolysis 4016
- proteome 6441
- proteomics 1185, 3588, 3658, 4496
- protic ionic liquids (PILs) 6787, 6788
- protocrystalline 9242
  - amorphous hydrogenated silicon film 9263
- protocrystallinity 9247
- proton 3788, 3861, 8208, 8468
  - accelerators 8582
  - concentration effect 8339
  - conductivity 6547, 7702, 7759–7760, 7767, 8216, 8224
    - of the ionomeric membrane 7759
  - exchange membranes (PEMs) 3871, 6539, 7757, 8207
  - exchange membrane fuel cell 373, 3385, 3863, 3871, 6539, 7694–7695, 7697, 7699, 7702, 7704–7705, 7707–7715, 7719–7720, 7722–7724, 7731, 7732, 7737, 7741, 7756, 7757, 7760, 7766, 7770, 7772, 7774, 8174, 8328, 8330, 8334
    - air starvation 7712
    - bipolar plates 7708, 7723
    - catalyst durability 7732
    - cell voltage variations 7711
    - chemical instability of membranes 7720
    - choice of the protogenic group 7772
    - component costs 7699
    - components 7702
    - concomitant reduction of relative humidity 7713
    - cost of components 7704
    - cost reduction 7724
    - costs 7695
    - design development 7756
    - durability 7707, 7710
    - durability improvement 7724
    - edge protection 7709
    - electrodes 7705



- electrolyte 7695
- for transportation 6539
- formation of peroxide 7720
- freezing 7715
- freezing conditions 7722
- fuel starvation 7712
- gas diffusion 7705, 7719
- impact of air contaminants 7713
- impact of hydrogen contaminants 7714
- ionomer 7760
- lifetime 7710
- loss of activity 7710
- materials 7695, 7756
- materials degradation 7715
- mechanical degradation of membranes 7722
- membranes 7704
- membrane contamination by ionic species 7723
- membrane development 7766
- microporous layers 7719
- morphology 7770
- operating temperature 7732
- operating window 7697
- performance 7697
- performance breakdown 7699
- platinum catalyst loading 7732
- platinum-based electrocatalysts 7731
- Pt monolayer electrocatalysts 7741
- Pt-alloy electrocatalysts 7737
- real-life conditions 7711
- sealing materials 7724
- seals 7709
- seals degradation 7723
- silicone seals 7724
- stack 7774
- temperature overshoots 7713
- transport losses 7708
- wear of cell 7715
- recoil scintillation detector 5568
- transfer 3419
- transporting medium 8340
- transport 7770
- trapping 8472
- proton-beam accelerator 8586
- protonic conductor 3897, 3899
- proto-oncogene 3601, 3643
- protoporphyrinogen oxidase 10350
- protoporphyrin 10651
- prototype fast breeder reactor (PFBR) 4061
- protoxin activation 4016
- protozoan 12019, 12041–12042, 12045, 12048
- protozoa 7671, 7684, 8764
- proven bull 2784
- prymnesiophyte 7272–7273
- pseudo-capacitance 3499, 6776, 6778, 6781–6782, 6784
  - due to nitrogenated functionalities 6781
  - in basic and acidic media 6778
  - in neutral medium 6782
  - related with reversible hydrogen electrosorption in nanoporous carbons 6784
- pseudocapacitor 795, 797, 3427, 3852
  - electrode materials 797
- pseudo-faradic effect 6776
- pseudo-faradic reactions 6782
- pseudomonad 501
- Pseudomonas* 8028
  - *aeruginosa* 5061
  - *fluorescens* 3157
  - marine-derived 3157
- pseudo-nitzschia 1655, 4826–4828, 4830
  - description 4826
  - detection 4828
  - economics 4827
  - nutrient interactions 4830
  - origins 4830
  - species identification 4828
  - toxicity 4826
- pseudorabies virus (PRV) infection 2968, 10859
- psychology of place 10373
- pterin 1710
- p-toluidine 7595
- p-type silicon 9213
- public breeding program 2536
- public ecology 539
- public green 953
- public health 217, 220
- public parking garages 7858
- Public Research and Regulation Initiative (PRRI) 4530, 4531
- public transit 1821
  - agency 1824
  - travel 1819
- public transportation 91, 94, 806–807, 809, 811, 816, 1812, 1815, 1835, 1863–1865, 3459–3460, 6496, 10924, 10933
  - bicycling 806–807, 816
  - captive riders 1863
  - choice riders 1863
  - cycling 811
  - developing countries 1863
  - effectiveness 1864
  - financing capacity 1864
  - improvements 1815
  - industrialized countries 1863
  - land use 10933
- modal integration 1865
- organizational capacity 1864
- public participation 1864
- rail-based 1815
- road-based 1815
- right-of-way acquisition 1864
- traffic enforcement 1865
- puffer fish poisoning 9085
- pulmonary hypertension syndrome (PHS) 8317
- pulpwood 1287
- pulse detonation combustion (PDC) 6849
- pulse width modulation (PWM)
  - method 3375
- pulverized coal combustion 2169, 2172, 8350
  - particulate emissions 8350
- pulverized coal
  - coal-fired boilers 8347
  - coal-fired generating stations 3821
  - in ultra-supercritical steam cycle (PC/USC) 2166
  - plants 2167
- pulverized fuel ash (PFA) 3821
- pulverized fuel combustion 1245
- pumice fall deposit 11621
- pump-and-treat system 2447
- pure alcohol 1223
- pure breed(ing) 392, 2785
- pure ethanol 1003, 1028
- pure gasoline 1007
- pure methane 341
- PUREX process 7145–7146
  - waste treatment 7146
- purifying protein 8078
- purine 8137
- push-pull converter 692
- putative gene 488
- pylon 3076–3077
- pyramiding 2566, 4027
  - alleles 6438
  - of resistance transgenes 4027
- pyranometer 9677, 9679, 9683, 9685, 9732, 9746
  - calibration 9679
  - responsivity functions 9683
- pyrazine 7579
- pyrex glass powder 11604
- pyrgeometer 9732
- pyrheliometer 7908, 9676–9677, 9685
  - calibration 9677
  - uncertainties 9685
- pyridine 6906
  - polybenzimidazoles 8182
- pyridinic nitrogen atom 8274, 8279, 8295
- pyridoxal 1684

pyridoxamine 1684  
 pyridoxine 1684  
 pyrimidine 2569, 8137, 8138  
   – cyclobutane dimers 11396  
 pyrite 6653, 6668, 8352  
 pyritic sulfur 2209, 2211  
 pyrochemical separation technologies 4059  
 pyrochlore 3893  
   – fluorite-type 3893  
   – structured oxides 2957  
 pyroclastic flow 11621, 11641  
 pyroforce gasification concept 1469  
 pyroformer 1526  
 pyrogenic aerosol 116  
 pyrolysis/pyrolytic 846–848, 851–853, 858, 869, 878, 1075–1076, 1206, 1212, 1214, 1428, 1448, 1518–1524, 1526–1529, 1585, 1609, 1614, 2226, 2414, 3958, 4006, 4008, 5126, 5164, 5236, 5247, 5289, 5298, 5300, 5307, 6996, 8281, 11442, 11445, 11833, 11852  
   – biochar systems (PBS) 851, 857, 871, 873, 885, 888  
     – sustainability 885  
   – bitumen 7478  
   – bubbling fluid bed reactor 1521  
   – char 882, 1529  
   – circulating fluid bed reactor 1521  
   – decomposition 1208, 1213, 1240, 1302, 1352, 1380, 1449  
   – degradation mechanisms 1518  
   – depolymerization-vaporization-cross-linking (DVC) model 5307  
   – devolatilization 5307  
   – energy balance 853  
   – evaporation of moisture 5307  
   – fast 1520  
   – feedstocks 852  
   – gases 1527  
   – gas 1529  
   – intermediate 1521, 1524  
   – kinetic parameters 1518  
   – liquid 1529  
   – pyrolyzed macrocycles 8269  
   – mechanical fluidized 1522  
   – of straw 1528  
   – of wood waste 869  
   – oil 1214  
   – oxalate-supported 8281  
   – permanent gas formation 1519  
   – principles 1521  
   – process technology 1521  
   – pyroformer 1526  
   – rotating cone reactor 1523  
   – slow 1526

  – techniques 1527  
   – temperature control 852  
   – twin screw reactor 1522

pyromorphite 2442  
 pyrophoric metallic plutonium 3534  
 pyroprocessing 7150, 7153  
 pyroxene 11603  
 pyrrhotite 9953  
 pyrrole 7579

## Q

Q allele 2704  
 Q gene 2704  
*q*-axis 24  
 QC calculation 6039  
 Qi standard 704  
 quadrupole magnetic levitation 6275  
 quadrupole magnets 6261–6262  
 quadrupole mass spectrometer (QMA) 9402  
 quality protein maize (QPM) 1693  
 quality wheat region 1125  
 quantitative  
   – microbial risk assessment (QMRA) 3587–3588, 6606, 6609, 6625, 6630, 8758, 8763  
     – improving the technique 6630  
     – improving the utility 6630  
     – wastewater reuse 6625  
   – genetics theory 7977  
     – of traits 9389  
   – trait loci (QTL) 2, 387, 400, 480, 2675, 4073, 4558, 5321, 6427, 6429, 6697  
     – alleles 6433  
     – by environment interaction (QEI) 6697  
     – cloning 6433, 6442  
     – mapping 6429, 6432, 6439, 6694, 6697  
     – QTL-based modeling 6434  
 quantum  
   – chemistry 6038  
   – dots 4661  
   – theory of light 7554  
 quarry by-products 11703  
 quartz sand 1923, 9434  
 quench reactor 3992  
 queue jumping green signals 1872  
 queuing 103  
 quick scatterometer 8944  
 quinine 7595  
 quinoa 2640  
 quinolone 5379  
 quinone 6778

quinone/hydroquinone pair 6776  
 quorum sensing 11889

## R

rachitis 11414  
 radar altimeter/altimetry 2456, 4577, 8931  
 radar sensor 6957  
 radial all-bus category 5999  
 radial pentagon analysis 4621–4622, 4638  
 radiance 2821, 2839  
 radiant cooling 897  
 radiant exposure 11380  
 radiant flux 9573  
 radiant water-based cooling systems 2858  
 radiation 135, 3023, 3258, 3518–3519, 3583–3585, 3787, 4906–4908, 5561–5562, 5573–5580, 5582–5591, 5594–5597, 5600–5604, 5606–5609, 7054, 7067, 7213, 7904, 8426, 8448, 8463–8464, 8467, 8471–8472, 8478, 8481–8482, 8490, 8531–8532, 8536–8538, 8544–8546, 8552–8554, 8556, 8561, 8965, 9710, 11152, 11155  
   – absorbers 5569  
   – accidents 3517, 3531, 3547  
     – Kyshtym accident 3531  
   – acute doses 5574, 5585  
   – anthropomorphic phantom 8545  
   – assessment 8425  
     – transfer parameters 8425  
   – atmospherically reflected 8553  
   – biological damage 8561  
   – biological effects 4906  
   – biological response 5575  
   – biology 11041  
   – bremsstrahlung 8545  
   – cancer 5575  
     – treatment 5582  
   – capture 2620  
     – by crop canopies 2620  
   – cell death 5575  
   – characteristics 5561, 5574  
   – chromosomal aberrations 5587, 5603, 5607  
   – chromosomal damage 5588  
   – chronic doses 5585  
   – conversion  
     – efficiency 2617  
     – factor 2617  
   – damage 5575  
     – to DNA 3585  
   – detection 5561, 5564–5572  
     – advancements in detection methods 5570

- advancements in detector materials 5569
- advancements in signal measurement 5572
- Compton-suppressed germanium detector 5571
- devices 7054
- equipment 8481
- fast neutron detectors 5568
- Geiger-Müller counters 5564
- moderating detectors 5569
- neutron detectors 5567
- proportional counters 5564
- scintillation detectors 5565
- semiconductor detectors 5566
- slow neutron detectors 5568
- detectors 3023, 5562
- disturbance 698
- dose 5576, 8410
  - dose-to-biota assessment 8410
  - linear-quadratic model 5576
  - screening dose rate 8410
- dose–effect relationships in animals 8463
- dose–response relationship 5576
- dosimetry 7054
- effectiveness factor (REF) 11043
- effects 5590
  - at elevated background concentrations 5586
  - hibernating animals 5590
  - on amphibians and reptiles 5595
  - on animals 5584
  - on aquatic invertebrates 5602
  - on aquatic organisms 5596
  - on aquatic plants 5609
  - on biota 5573
  - on birds 5594
  - on caribou and reindeer 8448
  - on fish 5600
  - on life span 5589
  - on mammals 5585, 5587
  - on pine trees 5606
  - on terrestrial invertebrates 5601
  - on terrestrial plants 5604
  - pocket mouse 5590
  - poikilotherms 5590
- energy 3028, 4643, 8462
  - measurement 3028
- environmental protection 5582
- equivalent dose 3023
- exoatmospheric burst 8490
- expanded and aligned field 8545
- exposure 4907–4908
- field irradiator studies 5590, 5608
- fission reactor physics 7054
- fluence-to-dose conversion factors 8544
- flux 7906
  - density 7908
- from solar and galactic sources 8561
- genetic effects 5573
  - in nonhuman species 5586
- genotoxic effect 5603
- harmful effects 4906
- health physics 7054
- high background areas 8478
- highly enriched uranium (HEU) 7213
- impacts on human populations 8464
- in the environment 8467
- intensity characterization 8544
- isotropic point detector 8546
- legacy 3518, 3584
  - sites 3518
- low-dose effects 3258
- morphological effects 5608
- mortality in fish 5597
- nonhuman biota 5580
- orphan sources 8532
- output (factor) 8549
- photosynthetically available 8965
- point kernel for uncollided Dose 8546
- Poisson distribution 5603
- possible effects in reindeer 8464
- protection 3519, 4905, 4907, 7054, 7067, 11392
  - guidelines 5583
  - of individuals 5583
  - principles 8531
- radiometric quantity 7904
- relative biological effectiveness (RBE) 5578, 5579
- reflection 8550
  - albedo methods 8550
- resistance 8556
- risk assessment 8532
- safety culture 3518
- selected geometries 8546
- shielding 7054, 8536–8538, 8542–8543, 8548, 8556
  - broad-beam attenuation 8548
  - design 8542
  - geometric progression formula 8542
  - history 8538
  - Monte Carlo calculations 8542
  - of buildup factors 8542
  - point-kernel computer codes 8548
  - practice 8543
  - source characterization 8543
- skyshine dose 8553
- smoking 8482
- source 7054, 8520–8524, 8526–8528, 8559, 8563, 8579, 8581–8582
  - accelerators 8581
  - brachytherapy sources 8520
  - calibration sources 8521
  - commercial Sources 8524
  - consumer products 8521
  - industrial isotope 8582
  - industrial sources 8520, 8523
  - in medicine 8579
  - irradiators 8523
  - lost source 8526
  - medical sources 8522
  - moisture/density devices 8521
  - occupational medical exposure 8581
  - orphan source 8527, 8528
  - physical characterization 8563
  - research sources 8526
  - specific source incidents 8527
  - used in human activities 8579
  - well logging sources 8520
  - spectrometers 8586
  - therapy 8580
  - transfer theory 7905
  - transport 8540–8541
- streaming through ducts 8552
- surface reflectivity 135, 9710, 11155
- use efficiency (RUE) 2615–2617, 2629, 2631–2632, 2671
  - determination 2617
  - environmental factors 2632
  - improvement 2629
  - sources of variation 2631
  - species variation 2631
  - stage of crop development 2632
- technically enhanced naturally occurring radioactive material (TENORM) 5591
- tissue sensitivity 5577
- transfer parameters 8426
- transiting 8472
- transmission of beams 8556
- transport 8556
  - equation 8538
  - theory 8554
- trapped particle 8471
- uncollided radiation doses 8545
- wavelengths 11152
- radiation-induced cancer 11034
- radiation-producing reaction 8562
  - binary reactions 8562
  - energetics 8562
  - radioactive decay 8562

- radiative
  - forcing 631, 10122
  - input data 9722
  - three-dimensional 11156
  - transfer models (RTMs) 9707, 9722, 11149–11150, 11156
  - transfer model simulations 7926, 9715–9716
    - Monte Carlo modeling 9716
    - theory (RTT) 7906, 7911
    - three-dimensional 9716
    - transfer 9688, 11397
- radical battery 7552
- radical chain reaction 3664
- radical polymer 7551
- radio communication 2984
- radioactive 3517, 3790, 7065
  - aerosols 8449
  - contaminant 4778–4779
    - environmental modeling assessment 4778
    - isotherm-based transport modeling 4779
    - multi-component reactive transport modeling 4779
  - contamination 3518, 3522, 3524, 3528, 3530–3531, 3540
    - environmental behavior 3522
    - EURANOS project 3531
    - in food products 3524
    - inhabited area 3528
    - management options 3524, 3528
    - mobility 3522
    - nuclear testing sites 3540
    - radiological impact 3524
    - STRATEGY project 3530
    - waste disposal options 3528
  - decay 8562–8564, 8570, 8599
    - constant 3790
    - law 3737
    - types 8564
  - doses 7044
    - aquatic pathways 7044
  - fission 8583
    - products 8623
  - iodine 3286, 8523
  - isotope 11027
    - of hydrogen 11027
  - material 4209, 7057, 7076, 8470, 8500, 8508, 8518, 8589
    - categories 8518
    - ground deposition 8500
    - tracer test 4209
  - nuclides 5561
  - pollution 5594
  - radium 8538
  - seawater 7390
  - thorium 11205
  - tracers 8594
  - transmutations 8562
    - disposal 7077
    - groundwater impacts 4774
    - groundwater restoration 7067
    - hazardous and mixed wastes 7068
    - high-level waste 7067
    - intermediate-level waste 7068
    - land disposal 8486
    - low-level waste 7068
    - management 7055, 7077, 8477, 8531, 8588
    - materials 8512
    - ocean disposal 8486
    - ocean dumping 8487
    - offsite disposal 7079
    - onsite waste management 7079
    - phyllosilicate clays 8603
    - reactive soil components 8603
    - repository 8603
    - soil environment 8598
    - spent nuclear fuel 7067
    - uncontaminated wastes 7069
- radioactivity 3024, 4907, 5560, 6688, 7044, 7047, 7059, 7114, 7800, 8387, 8397, 8434, 8448–8449, 8470, 8485, 8487, 8532
  - aquatic food chain 7044
  - Chernobyl-derived 8397
  - coal-fired power plants 8485
  - concentrations 7048
    - in drinking water 7048
    - in rivers and reservoirs 7048
  - ratio in Models 8434
  - detectors 5560
  - in caribou and reindeer 8448
  - in the marine environment 8387
  - in the surface seawater 8487
  - methods of food preparation 7047
  - sources in the environment 8470
  - sources 8449
  - transport 8532
- radiobiology 3583
- radiocarbon 8668
- radioc(a)esium 3534–3535, 3710, 3721, 7009, 7012, 7018, 7024, 7029, 7045, 8388, 8393–8394, 8397, 8399, 8429–8430, 8441, 8454, 8457, 8465, 8644, 8647
- contamination 3536
  - countermeasure 3536
- fallout 8457
- lake model 7029
- migration from lake catchments 8644
- model 7024
- speciation 8393
- transfer coefficient 8429
- radiochemistry 8599
- radioecological data 8435
- radioecology 3583, 7010, 7031, 7048, 8413, 8653
  - coastal models 7031
- radiogenic heat 4138
- radiogenic resource 4166
- radioimmunoassay 8580
- radioimmunoimaging 8581
- radioimmunotherapy 8581
- radioiodine 3534, 7045, 8430
  - transfer to milk 8430
- radioisotope/radioisotopic 3511, 8468–8469, 8542, 8569
  - decay data for shielding design 8542
  - identification devices (RIIDs) 7214
  - in the environment 8469
  - transport 3286
  - thermoelectric generators (RTGs) 8515
- radiolabeling 8522
- radiological
  - assessments 8441
    - transfer parameters 8441
  - dispersal device (RDD) 8529, 8530
  - environmental assessment models 8439
  - modeling 8653
  - protection 8426
  - toxicity 8514
- radiometer 9473, 9474, 9676, 9681
  - calibration sources of uncertainty 9681
  - long-term behavior 9474
- radiometry/radiometric 9713
  - from space 9470
  - measurements 2886, 9645
  - power units 11103
  - stations 10623
- radionuclide 2435, 3023, 3516–3517, 3519, 3524, 3527, 3535, 3547, 3555, 3583, 3585, 3706, 3711, 3719, 3722, 3725, 3730, 3761, 3762, 4778, 5586, 5610, 7008, 7010, 7013, 7026–7028, 7039, 7045, 7046, 7048, 7074, 7211, 8388, 8390, 8396–8399, 8400–8402, 8404–8406, 8411, 8412, 8426–8433,

- 8435–8437, 8441, 8454, 8456, 8468, 8524, 8531, 8543, 8563, 8597, 8599–8600, 8607, 8611, 8615–8618, 8620, 8626, 8634–8639, 8642, 8647–8651, 8653, 8655, 8656, 8663, 8664, 8668, 10403, 10423–10425, 11051, 11220, 11232
  - activity concentration 3535, 8427
  - activity 3725
  - aggregated transfer parameter 8432
  - allometric relationships 8437
  - allometry 8405
  - alpha-emitting 5586
  - analytical techniques 8668
  - as tracers 3719
    - of ocean currents 8655
  - balance in the catchment 8647
  - behavior
    - in estuaries 8401
    - in the marine environment 8412, 8663
  - bio-accumulated 8404
  - bioavailability 11232
  - bioconcentration factor (BCF) 7027
  - biological half-life 8405, 8436
  - biological recycling 8402
  - biomagnification 8406
  - bioreduction 4778
  - biouptake in fish 7026
  - Carlsson–Yamagata model 8649
  - chemical speciation 8607
  - cleaning of soil 10425
  - concentrations 7033, 7042, 7044, 8674–8675
    - factors 8402
    - in coastal areas? 7033
    - in human foodstuff 8426, 8441
    - in runoff water 8650
    - in surface water 7044, 8675
    - in water 7042
      - Indian ocean 8674
  - contaminants 4775, 4777, 4780
    - adsorption 4777
    - desorption 4777
    - mass transfer processes 4780
  - contamination 5598, 7038
    - of coastal areas 7038
    - of surface waters 7045
  - convection dispersion equation (CDE) 8617
  - cycling in the foodweb 8402
  - decays 8563, 8599
  - depth distribution 3722
  - dissolution 8611
  - dose–response models 8531
    - downward movement 3722
    - drinking Water 7045
    - electrokinetic cleaning of soil 10428
    - electrokinetic localization 10424
    - entrainment properties 8651
    - environmental behavior 3547, 8401
    - environmental surveillance 7211
    - exposure pathway 8441
    - fallout 3706
    - fate 8597
    - food chain transfer 8406
    - freshwater pathway 7048
    - geographical distribution 8412
    - global fallout 8635, 8637, 8656
    - half-life 3730
    - important soil processes 8607
    - in fish 7028
    - in lichens 8454
    - in marine systems 8411
    - in maternal milk 11051
    - in *Rangifer tarandus* 8456
    - in seawater 3585, 8668
      - distribution 8668
      - transport 8668
    - in sediments 8397
      - active A-sediments 7039
    - in water 7027
    - influence of bioturbation 8399
    - intake at equilibrium 8430
    - interactions 8393, 8395
      - in the water column 8393
      - with colloids 8395
      - with suspended particulates 8393
    - internally ingested 5610
    - inventories in sediments 8398
    - linear non-threshold (LNT) model 8531
    - long-lived 7074
    - marine environment 8390
    - measurements 3762
    - migration 8617, 8644, 8646, 8649, 8651
      - aggregated models 8646, 8649
      - from catchments 8634, 8642, 8651, 8653
      - in the soil 8620
      - model 8648
      - reductionistic models 8644, 8646
      - velocities 7010
    - mobility in soils 8428
    - modeling 7013, 8400
    - monitoring 7211
    - natural sources 8600
    - partitioning 8607, 8617, 8626
    - precipitation 8611
    - primordial 3583
    - redissolution from sediments 8398
    - redox-sensitive 8616
    - release 7074
    - remediation 10425
    - remobilization 8399
    - removal 10423
    - sampling 8668
    - scaling factor 8639
    - scavenging from the water column 8396
    - soil-borne 8616
    - solid–liquid distribution coefficient 8428
    - sorption 8611, 8618
    - sources 8543, 8662
      - in the marine environment 8662
    - speciation 3585
      - in seawater 8390
    - storage compartment 8649
    - sustainable remediation methods 10403
    - toxicity 11232
    - trace nutrients 8616
    - tracers 8524, 8658, 8681
      - in the world ocean 8664
    - tracing 8678
      - of ocean currents 8678
    - transfer
      - coefficient 8428, 8429
      - coefficient equation 8431
      - data 8435
      - function 8648
      - function per unit deposition 8638
      - to farm animals 8428
    - transport 4780
      - by runoff waters 8636
      - in terrestrial environments 8597
      - processes 7008
    - transuranic 10427
    - uptake by fish and aquatic foodstuffs 7046
    - use in sediment tracing investigations 3761
    - vegetation transfer factors 8615
    - wastes 4775
  - radiopharmaceutical 8522, 8580, 8594
  - radiosensitivity 5578, 5584
  - radiosonde 9724
  - radiostrontium 3534, 7009, 7012, 7033, 7045, 7047–7048, 8388, 8429, 8647
    - in runoff water 8647
    - lake liming 7048
  - radiotoxic nuclide 8481
  - radiotoxicity 7146
  - radiotracer 8413

- radium 7059, 7061, 8538, 8623
  - radium–226 3715
- radon 8475, 8478, 8531, 8623
  - gas 8478, 8481
  - radon–222 3715
- raft culture 6761
- Ragone plot 3852
- rail 1889
  - corridors 10927
  - interoperability directives 4943
  - mass transit 1893
    - cost characteristics 1893
  - public transportation 5974
  - rights-of-way 5974
  - technologies 1883
  - transit 1877, 1894–1895, 1897, 1900
    - capacity 1895
    - electrically powered 1877
    - impacts on property values 1897
    - land-use densities 1900
    - operating cost 1894
  - transit investments 5998
    - criticisms 5998
  - transit line 5966
  - transit-oriented development 1889
  - transport 246, 258
    - activity data 258
    - models 257
- railway
  - signal systems 5967
  - technology 4929
- rain
  - screens 3697
  - water 3460
- rainfall 8690, 8692
- rainforest 2745
- rainstorm event 4685
- rainwater 2324, 2327, 2330, 2332, 2334, 4746, 8688–8695, 8697–8700, 10190, 11874, 11875
  - boiling 8698
  - contaminants 8697
  - contamination 8694
  - filtration 8698
  - guidelines 2332
  - harvesting 2330, 4746, 10190, 11875
    - alternative water supply 8691
    - catchment 8690
    - infiltration 8691
    - maintenance 8700
    - nonpoint source pollution 8692
    - operation 8700
    - storage 8690, 8694
  - system design 8699
  - technologies 8693
  - treatment 8691
- infiltration 8695, 8696
  - capillary action 8696
  - gravity 8696
  - types of systems 8696
- limitation 2332
- management 4743
- microbial contamination 8698
- nonpoint source pollution 8692
- operation 8700
- public perception 2334
- quality 8697
- roof catchment systems 8690
- samples 8697
- standards 2332
- storage 8690, 8694, 8699
- treatment 8697, 8699
  - chlorination 8699
  - chlorine tablets 8699
  - ozone 8699
  - ultraviolet (UV) light water disinfection 8699
- urban runoff control 8692
- ram feeder 4963
- Raman
  - chemical imaging spectroscopy (RCIS) 5390
  - crystalline fraction 9249
  - crystallinity 9250
  - fingerprints 5393
  - scattering 7501
    - spectroscopy 5385
  - signal 7502
  - spectroscopy 5387, 5389–5390, 9899
    - acinetobacter 5390
    - pathogen detection 5389
- random
  - bred population 485
  - breeding population 482
    - linkage disequilibrium 482
  - waves 7403
- Rangifer*
  - *tarandus* 8462
  - *terandus* 8450
- Rankine cycle 1330, 3819, 4055, 4061, 4169, 4260, 4296, 6824, 11762
  - bottoming cycle (RBC) 6824, 6829
  - efficiency 2167
  - plant 2385
  - steam cycle 2167
  - steam plant 2172
- Raoult effect 134
- rapeseed oil 924, 4557, 8085–8086
  - methyl esters (RME) 923
  - viscosity 8086
- rapid bioassessment protocols (RBPs) 3274, 3587
- rapid diagnostic tests 5383
- rapid transit
  - lines 5989, 6014
  - subway lines 5997
  - technology 1879
- rapidity 3452
- rare earth
  - element (REE) 6634, 9925, 11024
  - materials 5102
  - oxides (REO) 9948
- raw gas
  - cleaning 1586
  - upgrading 1662
- raw marine seafood 12032
- raw material 6896, 8771, 9027, 9043, 11437
  - cascading 9043
  - extraction 9027
  - production 2072
  - scarcity 9027
- raw product gas 1464
- raw seafood product 12020
- raw spectral pixel response 11118
- rawinsondes 9724
- ray effect 8555
- ray tracing method 12286
- Rayleigh scattering 135, 311, 325, 8960–8961, 9628, 9652, 11155
- Rayleigh-Taylor instability 7171
- reactant gas
  - addition (RA) 6722, 6728, 6735
  - permeability 7769
- reaction energy 3423
  - DFT-calculated 3423
- reaction mass efficiency (RME) 4586, 4615, 4619, 4636
- reaction norm 464
- reaction torque 22
- reactive nitrogen species (RNS) 3601, 3665
- reactive oxygen species (ROS) 4, 350, 2644, 2651, 3599, 3662, 5317, 6168
  - detoxification 2651
- reactor 3805, 3808, 3813, 3814, 3816
  - application 3804
    - Doppler broadening 3804
  - control elements 3808
  - perturbations 3816
  - physics 3798
  - power changes 3816
  - primary nuclear design 3808
  - principle design process 3813
  - reactivity 3814

- shielding 8539
- theory 3810
- trial configuration 3808
- real time kinematic GPS 3071
- real-sky irradiation 10626, 10629, 10632, 10634
- real-time
  - seismology 2429
  - spectroscopic ellipsometry (RTSE) 9245, 9247
- reanalysis climate 2108
- ReaxFF 6039, 6043–6044
  - simulations 6044
- rebranding 11353
- reburning 8364
- recharge oscillator 2127
- rechargeable battery 8715
  - separator membranes 8715
- recipient oocyte 6162–6163
  - enucleation 6163
  - sources 6162
- reciprocating engines 1032
- reciprocation combustion engine 1459
- recirculated flue gas 4968, 4985, 6465
- recirculating aquaculture system (RAS) 6313
- recirculation system 548
- reclaimed concrete material 11703
- reclaimed (recycled) asphalt pavement (RAP) 11703
- reclaimed water 2327–2328, 2331–2332, 2334, 11875–11876
  - applications 11875
  - guidelines 2332
  - microbial pathogens 11876
  - public perception 2334
  - road runoff 2331
  - roof runoff 2331
  - standards 2332
  - water qualities 11875
- recognition
  - algorithm 3117
  - elements 1647, 1649, 1653, 1656, 3588
    - attachment of “adapter molecules.” 1649
    - physical adsorption 1649
- recombinant
  - antibodies 8078
  - biopharmaceuticals 8068
  - DNA technology 8060, 8075, 10816
  - insulin 8027, 8067, 10816
  - nucleic acid techniques 10770
  - protein 639, 640, 8024, 8052
    - chicken 640
    - plant-derived 8030, 8052
    - storage proteins 1693
- recombinase gene 10685, 10899
- recombinase-mediated cassette exchange (RMCE) 10831, 10913
- reconfigured integrated two-stage liquefaction (RITSL) 2232
- reconnaissance satellite photograph 283
- reconstructed embryos 6169–6170
  - activation 6169
  - culture 6170
- recooling 9534, 9536
  - by natural water resources 9534
- recoverable coal 2197
- recreation vehicle (RV) 3868
- recreational waterborne illness (RWI) 8758
- recreational water 3588, 6320, 6626, 6629, 8758, 8760, 8766
  - fecal indicator 8766
  - health data 8766
  - microbial risk assessments 8758
  - monitoring 8760
  - risk 8758
    - fecal indicators 8758
    - pathogens 8758
- recrystallisation 4586
- rectification 994
- rectisol 1590, 2153, 2239
- recursive least square 50, 57
- recyclability 3445
- recycled aggregate 2404
- recycled asphalt 11705
  - planings (RAP) 2406
- recycled concrete aggregate (RCA) 2404
- recycled content 9029, 9037
  - unintended consequences 9029
- recycled material 11701, 11705
  - current specification 11705
- recycled wastewater 6628
- recycled water 2333, 11887–11888
  - energy comparison 11888
  - energy cost 11887
- recycling 569, 2398, 2400, 2404, 2407, 2409–2410, 2413, 2419, 3445–3447, 4958, 8771–8773, 8776–8782, 8784–8787, 8789, 8792, 8794–8795, 8797, 8801–8802, 8808–8810, 8812–8815, 8817–8818, 8827–8829, 8833, 8835–8837, 8844, 9027, 9037, 9589, 9979, 9997, 10031, 10580–10581, 11658, 11674, 11684, 11689, 11699–11700, 11737, 11852, 11870
  - aluminum 8778, 8787, 8814
  - as a rehabilitation alternative 11700
  - automated collection 8784
  - awareness 10027
  - cardboard 8786
  - carpets 8829
  - ceramic glass recognition 8808
  - collection 8771, 8784
  - common hindrances 8782
  - common problems 8781
  - concept 8795
  - containers 8782
  - control actions 8833
  - cycle 9983
  - definition 8771
  - drop-off centers 8784
  - dual energy X-ray transmission (DE-XRT) 8836
  - dual-stream collection 8785
  - economy 11710
  - environment 8481
  - environmental benefits 8773
  - ferrous metals 8810
  - fibers 8827
  - financial analysis 8787
  - fresh concrete 2407
  - glass 8779, 8787, 8801
  - goals 8789
  - human factors 8781
  - hyperspectral imaging (HSI) 8836
    - applications 8837
  - in hot mix asphalt 2407
  - incentive programs 8785
  - industry 8776–8777
  - innovative sensing technologies 8835
  - laser-induced breakdown spectroscopy (LIBS) 8836
  - material
    - integrity 9037
    - misplacement 8781
    - recovery facility (MRF) 8785
  - metal 8809
  - metallic waste 2413
  - methods 8784
  - mineral waste 2404
  - newspaper collection 8786
  - non-ferrous metals 8814–8815
  - non-glass materials 8802
  - of energy-intensive materials 9589
  - of glass 2409
  - on-line recognition 8808
  - organic waste 2409
  - paper 8780, 8797
  - plant 8832, 8834
    - scale control 8834
  - plastics 2410, 8780, 8817, 8818
  - polluting agents 8812
  - processes 8777
  - ratio 10012



- program 11660
- rotating drums (RD) 8812
- separation 8771, 8813
- shredding 8812
- single equipment control 8835
- single-stream collection 8785
- sorting 8814
- steel (tin) cans 8787
- technologies 8794, 8797
- textile 8828
- timber 2419
- X-ray fluorescence spectroscopy (XRF) 8836
- red algae 356, 365
- red angus breed 1724
- red list index (RLI) 10087
- Red Maasai
  - breed 1772
  - sheep 1758
- red mark syndrome 1932
- red oil 8503
- red tide 1925, 4820, 4825, 7388, 7390
- redox 786
  - circuits 3666
  - cycling 3660
  - electrolyte 3855
  - energy 762
  - flow batteries 3853
  - proteomics 3667, 3669
  - reactions 3657, 3852, 4099, 4622–4623, 6782, 8610
    - pseudo-faradic 6782
    - reduction-oxidation reaction 6069
- redox-active metals 10157
- redox-flow battery 750, 766
- reduced height (*Rhr*) alleles 6210
- reduction fishery 550
- reductionism 8643
- reductive dechlorination (RD) 2444
- reductive stress 3658
- redundancy 3452
- reed canary grass 6024–6025
- reef 2490, 2493, 2498, 2506
  - accretion 2493
  - fish 2498
  - invertebrates 2506
- reef-associated organism 2502
- reef-building coral 2493–2494
- reference animals and plants (RAPS) 8434
- reference diffuse irradiance 9679
- reference wind speed 6604
- reference-frame theory 39
- refinery gas 7841, 7842
- reflected radiation 10633
- reflector 6031
- reforestation 1571, 2513, 4746
- refractive index (RI) 1647, 3587
- refrigerant 9517
  - compression 9522
  - cycle 9518
  - vapor 9517–9518
- refrigeration 4375, 9509, 10559
- refuse-derived fuel (RDF) 5284, 5289, 9997, 11761, 11791, 11793, 11795–11796, 11803, 11805, 11810, 11812–11815, 11821, 11825, 11836, 11837
  - advanced resource recovery facilities 11796
  - air-classified 11791
  - air quality control equipment 11814
  - baghouse 11815
    - co-firing with coal 11793
    - operations 11795
  - combustion 11836
  - conveyors for movement of materials 11812
  - electrostatic precipitator (ESP) 11814
  - emission control 11805
  - equipment description 11803
  - heating value 11821
  - higher heating value (HHV) 11821
  - low-sulfur RDF 11793
  - magnets for ferrous recovery 11812
  - mechanical biological treatment (MBT) 11837
  - power production 11825
  - processing equipment 11810
  - screens used in resource recovery 11812
  - scrubber 11815
  - shredders for size reduction 11810
  - steel pan conveyors 11813
- regasification 6847
- regenerative
  - braking 3393, 3496, 8848–8849, 8853, 10542–10544, 10548, 11504, 11537, 11540
  - capacity 8868
  - design 8866
  - development 8855, 8860, 8866
  - selective catalytic reduction (RSCR) system 11807
  - thermal oxidizer 10574
- regenerator 2370
- region of no escape (RONE) 84
- regional air quality 8879–8880
  - definition 8880
  - legislation 8880
  - monitoring 8880
- regional bus system 5995
- regional climate modeling 8902, 8903, 8905, 8909–8910, 8912
  - Dynamical Downscaling 8912
  - Evaluating 8909
- regional climate simulation 8908, 8916
- regional earth system model 8905
- regional rapid transit development 5996
- regional transit network 5988
- regional transmission organization (RTO) 12174, 12176
  - planning methods 12176
- regression-on-the-mean models 4080
- regulatory impact analyses (RIA) 235
- regulon biotechnology 6, 11
- reheat combustor 6822
- Reichardt's hypothesis 10990
- reindeer 8448, 8450, 8457, 8462
  - radiation doses 8462
- relative biological effectiveness (RBE) 11028
- relative positive acceleration (RPA) 256
- relative statistical entropy (RSE) 11709
- relay setting 12089
- reliability diagrams 2130
- reliably extending dynamic range 11113
- reluctance torque 22, 24, 34
- remanent magnetism 25
- remanufacturing 3447
- remedial
  - investigation (RI) 2009
  - objective 4785–4786
  - strategy 4786–4787
  - technologies 4786, 4787
- remediation 2439–2440, 3517, 3520–3522, 3530, 3542, 3544–3546, 3584, 4788, 4790–4791, 4795–4797, 4799, 4803, 10190, 10414, 10435, 10439
  - benefits 4791, 4796
  - blight reduction 4795
  - by biomineralization 10414
  - by objectives 3544
  - cost-effectiveness analysis 3545
  - decision-aiding tools 3544
  - decommissioning 3542
  - different environments 3522
  - economics 4788
    - sustainability analysis 4797
  - ethical acceptability 3530
  - external costs 4790
  - financial costs 4790
  - indicative remedial costs 4799
  - industry 10439–10441
    - risk assessment process 10441
    - sustainability 10441
  - justification 3520, 3546

- multi-attribute-utility analysis (MAUA) 3546
- removal of disamenity 4795
- site evaluation 3521
- strategy 3520
- sustainability 4803
  - principles 10435
- technologies 2440, 2443, 2447
  - chemical treatment 2446
  - classification 2440
  - electrokinetic separation 2449
  - microcosm studies 2443
  - multiphase extraction 2447
  - permeable reactive barriers 2447
  - selection 2439, 2440
  - thermal treatment 2448
- unplanned external costs 4791
- REML (restricted or residual maximum likelihood) 398
- remote sensing 285, 3171, 8920–8922, 8930, 8939–8941, 8943, 8948, 8952, 8957
  - active sensors 8940
  - data 8923
  - measurement of electromagnetic radiation 8921
  - of natural disasters 8939, 8948
  - of ocean color 8952
  - of sea surface salinity 8930
  - passive sensors 8940
  - reflectance 8957
  - shipboard observations 8922
  - study of volcanic activity 8941
  - techniques 8929
  - telemetering 8922
  - tracking flooding 8943
- renaturation 11366, 11373
- renewability 9037
- renewable cooling 9451
- renewable diesel 10511
  - from soybeans 10511
- renewable electricity generation 8980
- renewable energy 511, 514, 672, 1146, 1313, 1347, 1446, 1477, 1478, 1489, 1533, 1609, 2150, 2995, 4226, 4334, 5116, 7968, 8975, 9035, 10937
  - certificates (RECs) 10457
  - from biomass 8975
  - from plants 1478
  - in developing countries 1146
  - portfolio standards 4226
  - certificates (RECs) 10457
  - credit (REC) market 10463, 10476, 12264
  - entry act 1623
  - innovation 12223, 12238, 12243
  - community acceptance 12238
  - community involvement 12238
  - intra-firm acceptance 12243
- policies 12266
- power plant 11809
- powered desalination 9761
- resources 3395
- sources 1574, 3394, 3464, 7852, 7962
- standards 12216
- strategy 8384
- systems 9673
- renewable fuel 5463, 5489
  - hydrogenated-derived 5489
  - standards (RFS) 1499
- renewable generation 3014, 8980, 8989, 8992–8995, 8997, 9335
  - curtailment 8997
  - demand response 8994
  - electricity storage 8995
  - flexible generation 8997
  - forecasting techniques 8993
  - locational marginal prices 8992
  - markets 8989, 8994
  - new loads 8997
  - operating tools 8994
  - policy drivers 9335
  - stochastic planning 8994
  - thermal unit cycling 8989
- renewable generator 8991
  - ancillary service markets 8991
  - capacity markets 8991
- renewable heating 9451
- renewable penetration 8992
- renewable portfolio standards (RPS) 12264
- renewable resources 6896, 7848, 8983
  - characteristics 8983
- renewable-energy-powered vehicles 8329
- renieramycin 3161
- Reoviridae* 11990
- reproduction/reproductive 10817–10818, 10889
  - female germ line 10818
  - male germ cells 10817
  - sinks 2628
  - system 3637
    - development 3637
  - technologies 10826, 10867
  - toxicity 4849
- reprogramming 6159–6160
  - of DNA methylation 6159
  - of gene expression 6160
  - of histone modifications 6159
- reptiles 9165, 10090
  - as sentinels 9165
- research program (WCRP) 8921
- reserve sharing agreements 8990
- reservoir 2788, 2792, 2797, 2800, 2801, 5674–5676, 5678–5681, 5683, 5692, 5700, 7799, 9022
  - biological processes 5679
  - biomanipulation 5700
  - construction 2788
  - density- or wind-driven currents 5683
  - engineering 9001
  - environmental protection 2801
  - eutrophication 5681
  - external material inputs 5676
  - fluctuation 2792
  - forecast simulation 9022
  - geological variability 7799
  - hydraulic residence time 5680
  - in karst 2800
  - internal nutrient loading 5679
  - limnology 5675
  - management 5700
  - manipulation of water quality 5680
  - monitoring 4219
  - nutrients from watersheds 5678
  - particle settling 5678
  - sediment bed 5679
    - flux of solutes 5679
  - sediment transport 5675
  - sedimentation 3708
  - simulation of water quality 5683
  - slope instability 2792
  - stimulation 3503
  - sustainability 5674
  - sustaining fish habitat 5692
- residual
  - camera motion 58
  - feed intake (RFI) 1738
  - gas trapping 4122
  - nutrients 3780
  - oil solvent extraction 2232
  - radioactivity 7076
  - soil 2432
- residues 1180–1182
  - from beer production 1181
  - from cereal processing 1180
  - from meat processing 1182
  - from milk production 1182
  - from pulp and paper production 1182
  - from sugar production 1181
  - from the manufacturing of fruits, vegetables, and potatoes 1180
  - from vegetable oil production 1181

- from wine production 1182
- in distilleries 1182
- resilience theory 3344, 3452
- resistance allele 6437
  - pyramiding 6437
- resistance thermometer 9681
- resonance effect 7556
- resonance ionization mass spectrometry (RIMS) 8657
- resource 3347, 4225, 10063
  - allocation theory 410
  - behavior 3345
  - biological species 10063
  - certificate 9038
  - competition 10075
  - conservation 8774, 10581, 10584
    - conservation and recovery act (RCRA) 7825, 10016
  - conservation efficiency (RCE) 11692
  - consumption 10063
  - dynamics 3345
  - exploitation 4225
  - flows 6853–6855
    - sustainable management 6854
    - urban planning 6855
  - management decisions 3347
  - monitoring 3345
  - of plants 10063
  - partitioning 10073, 10076
  - productivity 1503
  - recovery 10588
    - recovery act (RRA) 10016
  - repletion 9025
  - shortages 11700
- resourcefulness 3452
- resource-use efficiency 155
- respiration energy flow 3308
- respiration 2645
- respiratory infection 5360
- respiratory syndrome virus (PRRSV) 1651
- respiratory toxicant 3640
- restocking 6388
- restricted feeding 9366
- restricted greedy routing 11566
- restricting germination 9146
- restriction fragment length polymorphism (RFLP) 6696
- resuspension of material 254
- resveratrol 10698
- retardation
  - coefficient 2041
  - factor 8618
- retinol-binding protein (RBP) genes 10892
- retrospective forecasts 2138, 2143
- retroviral
  - infections 8139
  - vectors 642
- retrovirus 642, 643, 4999, 5001, 10797, 10826, 10904, 10905
  - replication-competent 643
  - replication-defective 643
- return to nature 4737
- reusability 3445
- reuse 3447, 8792
  - of materials 9029
- reused water 2327, 2328
- reverse airflow baghouse 8357
- reverse Monte Carlo (RMC) technique 6073
- reverse osmosis (RO) 2382, 2902, 7323, 9759, 9761, 10530, 10532, 11884
  - with photovoltaic 9761
- reverse transcriptase 5002
  - chain reaction (RT-PCR) 2699
- reverse transcription (RT)-Southern blotting 2699
- reverse-acting grate 6454–6456
  - siftings 6455
  - Vario 6456
- reversed field pinch (RFP) 7164
- reversible hydrogen electrode (RHE) 7763, 8208
- Reynolds
  - averaged Navier-Stokes (RANS) equations 12210
  - averaging 2060
  - equations 10980
  - number 2028, 2048, 10991
  - stress closure 11277
  - stress model (RSM) 11281
- rhodium 3947–3948
  - catalyst 3939, 3947, 3948
- ribavirin 8139, 8149
- ribbon-silicon technologies 9435
- riboflavin 1684
- ribosomal DNA (rDNA) gene 2691
- ribosome inactivation protein 2647, 4034
- ribulose-1,5-bisphosphate (RuBP) 1100
- rice 2706, 2710–2711, 8018–8019, 10347
  - blast disease 2576
  - C<sub>4</sub> photosynthesis pathway 8019
  - elite inbred lines 8019
  - new plant type 8019
  - plant architecture 2706
  - production 8018
  - seed
    - color 2710
    - shattering 2711
  - selective herbicides 10347
  - yield potential 8018
- rice–fish farming 8201
- rice-water stool 5052
- Richards equation 3220
- Richardson number 10983
- riddling 4970
- rides 2405
- Rietveld refinement 7530, 7540
- rifampicin 11139
- rifamycin 506
- Rift Valley Fever (RVF) 1759, 5361
- rill erosion 3709, 3744
- Ripley's *K* statistic 3334
- risk assessment 3265–3266, 3273, 3274, 3275, 6606
  - animal models 3275
  - basic framework 3266
  - biological surveys 3273
  - biomarkers 3274
  - genomics 3275
  - physiologically-based pharmacokinetic (PBPK) models 3274
  - toxicokinetic models 3274
- risk of disease burden 6629
  - disability adjusted life years (DALYs) 6629
- risk-screening environmental indicators (RSEI) 4859
- river 9049, 9050, 9051, 9054–9055, 9057–9059, 9061
  - advection 9055
  - basin 9049
    - management 5825
  - blindness 12008, 12009
    - control 12009
  - catchments 8638
    - contamination 8638
  - channel regulation 5828
  - characteristics 9049
  - contaminants 9050, 9061
  - dispersion 9055
  - dissolved oxygen 9057
  - ecosystem 4689
  - fate 9049
  - flood management 4688

- floodplain 3723, 3738, 3741, 3753, 8652
  - radionuclide removal 8652
- flow 6347, 9054, 9056
  - impacts on water quality 9056
- hydrodynamic model 9055
- ice 291
- Manning equation 9054
- mathematical formulations 9051
- modeling 9058, 9061
- pathogen pollution 9050
- point source pollution 9050
- pollutant loadings 9057
- quality 9055
- residence time 9057
- sediment siltation 9050
- transport 9049, 9054, 9059
- water 11922, 11924
  - concentrations of target compounds 11922
  - occurrence of pharmaceutical metabolites 11924
- waterbody 9051
- rms-error 60
- RNA
  - interference (RNAi) 4039, 10757, 10761, 10771, 10854
    - Double-Stranded RNA 4039
    - technology 355
  - molecules 4513
  - silencing 10699, 10701–10702
- RNA virus 642, 8140
- RNA-silencing mutants 10706
- road 3068–3069
  - markings 3069
  - work zones 3068
  - congestion pricing 5022
  - construction sites 3067–3068, 3071
    - safety barriers 3071
  - course estimation 6962, 6973
  - crossing 68
  - markings 3078–3079
    - in work zones 3078
  - network 2465
  - pricing 5033
    - basic theory 5033
  - recognition systems 6952
  - safety 65, 67, 70, 88
  - sweeping and washing 269
  - topology 2470
  - traffic 205, 258, 664
    - activity data 258
  - transport model 254–256
    - average-speed models 254
    - combustion 254
- COPERT 255
  - instantaneous models 256
  - modal models 256
  - multiple-regression models 256
  - traffic situation models 256
- transport 245–246
  - pollution 248
  - source of pollution 246
- work map 3068–3069, 3071, 3075, 3077
  - beacon 3077
  - pylon 3077
  - wireless communication 3075
- work zone 3070
- road-traffic conditions 3084
- road-traffic environment 3082, 3085
- roadway network 7851
  - efficiency 7851
- Roault effect 132
- robot/robotics 2477, 2479, 3172
  - configuration 2477
  - mapping 3172
  - path-velocity decomposition 2479
- robustness 3452
- rock 4186, 4192
  - geothermal systems 4148
  - insulating capacity 4192
  - permeability 4186
  - systems 4142
    - rock and reed systems 1633
- rockfalls 3248
- rocking-chair battery 11519
- rogue bore 4427
- roll back malaria (RBM) partnership 12001
- roller-cone bit 4394
- Roman house 903
- roof
  - catchments 8693
    - water quality 8693
  - gardens 4700, 4702, 4703, 4717, 4731, 4748, 10359
    - technology 4703
  - greening 4690, 4734
    - in Germany 4734
  - vegetation 4751
  - water collection systems 8699
- roofing shingle scrap 11704
- rooflights 2809, 2812
- rooftop water harvesting 8690, 8694
- room temperature ionic liquid (RTIL) electrolyte 6054
- root 9062, 9063, 9065–9066, 9068–9072
  - abiotic stress 9066, 9071
  - anatomy 9065
  - biomass 9066
  - chemical signals 9068
  - development 9066, 9068
  - field phenotyping 9071, 9072
  - fraction 9063
  - length density (RLD) 9066
  - lodging 6203, 6205, 6207
  - longevity 9070
  - marker-assisted selection (MAS) 9072
  - mean square deviation (RMSD) 9642
  - morphology 9065
  - nutrients 9068
    - capture 9070
  - penetration ability 9070
  - resource capture 9069
  - topology 9065
  - traits 9065, 9069
  - uptake of water and nutrients 9062
  - water capture 9069
- root-knot nematode 2702
- root-shoot signaling 2643
- Rossby
  - length scale 11265
  - number 12072
  - wave 2136
- Ross–Nilson G-function 7918
- rotary kiln 1525, 1528, 5275, 5276
  - incineration 5273, 6976
- rotating magnetic flux 12145
- rotating magnetic vector 12144
- rotating ring disk electrode (RRDE) method 7739, 7745
  - electrode stability 7745
- rotavirus 11990
  - route of transmission 11990
- rotor 19
  - inlet temperature (RIT) 6820
- roundworm 12007, 12029
- route guidance 3082–3084, 3093
  - presentation timing 3093
- routing
  - error 11573
  - in straight way 11578
  - overhead ratio (ROR) 11565
  - protocol 11553, 11556, 11575
    - position-based 11553, 11575
- rubber separator 8748
- rubble 4722
- Rubella* 5349, 5351
  - host heterogeneity 5349
  - vaccination 5349, 5351
- rubidium 4180
- rubisco 2624–2625, 2634, 2644
- rumex 1116
- run definition 97

- runoff waters 2336, 8635
- run-of-mine coal 3846
- rural areas 10364
  - intensification 10364
  - marginalization 10364
- rural development 1564
- rural electrification 1445
- rural land use 5787
- Russian Global Navigation Satellite System (GNSS) 3071
- ruthenium 3975, 5176, 5191, 6571, 8266
  - catalyst 8266
  - complexes 6575, 6579
  - oxide 798
- rye 1111, 1122
- S**
- Sabatier principle 3415, 3421
- Sabin vaccine 8144
- Sabin-like virus 8153
- saccade 47, 49, 52, 54
  - controller 52
- saccharification 977, 989, 992, 11449
- Saccharina 9122
- Saccharomyces cerevisiae* 973, 975, 1193, 6299
- Saccharum 1273
- S-adenosylmethionine (SAM) 1695
- safe drinking water 7825, 9564
- safe water framework 6607
- safety barrier 3072, 3075
  - detection 3075
- saframycin 3157
- Saharan air layer (SAL) 5072
- Salicaceae 6021
- salicylic acid 8024
- saline
  - formations 2155, 2160
  - groundwater 4127, 4129
  - soils 5315, 5318, 5327
- Salinispora tropica* 3163
- salinity 2154, 2712, 4248
  - stress tolerance 2712
  - minimum water (SSM) 8659
  - tolerance 5321–5323, 5326
    - crops 5327
    - gene combinations 5326
    - proteins 5326
    - traits 5322
- salinization 5316
- salinosporamide A 3162, 3164
- salmon 519, 544, 575
  - aquaculture industry 10319
  - farming 3575
  - production 1946
  - stocks 6389
- Salmonella* 5051, 5060, 8765
  - *enterica* 12014
  - *pullorum* 8309
- salmonellosis 5060, 5360, 5381
- salmonid
  - aquaculture 6391
  - spawning gravels 3755
- salt 2367
  - accumulation 2755
  - hydrates 10557, 10559
  - iodization 1692
  - overly sensitive (SOS) pathway 5324
  - passage rates 2905
  - sensitivity assay 5321
  - sequestration 5326
  - stress 2712, 5324
  - tolerance 5319
    - mechanisms 5319
    - of dicotyledonous crop species 5319
  - tolerant crop 5320, 5322, 5323
    - breeding programs 5322
    - transgenic approaches 5323
    - varieties 5320
- salting procedure 7047
  - centrifugation 7047
  - rotation 7047
- samarium strontium cobaltite (SSC) cathode 9863
- samarium–cobalt (SmCo magnets) 26
- sand dune 3283
- sand-lime bricks 3833
- sandstone 7801
- sandwich assay 1656
- sanitary city 11340
- sanitary landfill 4767, 5721, 5731, 5736, 11340, 11835
  - alternative daily cover (ADC) 11835
  - dry-tomb type 5731
- sanitation 2560
- sanitizing wastewater 1171
- saprophytic microbiota 2561
- Sarcocystidae* 12041
- sasol slurry phase distillate (SSPD) process 2225
- satellite 4566, 4567, 4569, 4576, 7515, 8490, 8950, 9197, 9627
  - aerosol index 6748
  - altimetry 2456
  - colonies 5550
  - equations of motion 4569
  - laser altimetry 4576
  - mascons 4569
  - multi-angle imaging spectroradiometer (MISR) sensors 7515
  - observation 182, 197, 7285
  - ocean color
    - data 8970
    - imagery 8955
    - sensors 8926
  - orbit
    - control 4567
    - perturbations 4565
  - orientation 4567
  - photography 283
  - rainfall observations 8950
  - remote sensing 8920, 8947
    - for oil spills 7515
    - of forest fires 8947
  - safe mode 4567
  - sensors 8921, 8923, 9627, 9741
  - silicon solar cells 9197
  - Stokes coefficients 4569
  - system-generated electromagnetic pulse (SGEMP) 8490
- saturation ratio 132
- saturnism 10483
- Savonius rotor 3402
- sawtooth signal 55
- saxitoxin 4821, 4823, 4832, 9083
- scalar control 35
- scalded skin syndrome 5062
- scallop culture 7266
- scallops 4829
- scan line 3188, 3190
  - classification 3188, 3190
  - segmentation 3190
  - super-segmentation 3190
- scanning transmission electron microscopy (STEM) 7739, 7744
- scattering
  - effect 9628
  - law 3800
- scene photometry 11103
- Scenedesmus communis* 356
- schedule 104
  - coordination 104
  - definition 97
- schedule-based strategies 106
- Schiff-base epoxidation catalysis 7602
- Schistosomatidae* 12043
- schistosome worms 12003
- schistosomiasis 12003, 12005–12006
  - control programs 12006
  - improved funding 12006
  - treatment 12006
- schistosomosis 5360

- Schizochytrium limacinum* 362
- Schlumberger's modular formation  
  dynamics tester 331
- Schmidt number 596, 600, 604
- school pond project 954
- school yard 954
- Schottky diode 1993
- Schultz-Flory distribution  
  factor 2242
- Schwarze Pumpe 1430, 1440
- Science education 3202
- scientific  
  – drilling 6417  
  – information 4502  
  – knowledge 4502
- scientification of planning 4535
- scientometric 4502, 4515
- scintillation detector 5565
- scleractinian corals 2503
- Scleractinia* 2493, 2505
- Scofield factor 6075
- scombrototoxin 9082, 9101, 9104  
  – fish poisoning 9083
- scotopic vision 11101
- scrap tires 11704
- scraper 5092
- scrapie disease 2969
- screen printing 9960
- screenable marker gene 2598
- screen 2198
- screw-type engine 1407
- scrubber 1340  
  – reaction products 11739
- Scyphozoa* 12047
- sea  
  – clutter 7504  
  – floor 3151  
  – ice 280–281, 286, 2514, 2518, 2761–2763, 2766, 2775  
    – brine-pocket physics 2766  
    – computational considerations 2775  
    – global climate models 2763  
    – models 2763  
    – seasonal 2762  
  – level 2455, 2457, 2459–2460, 2492  
    – change 2455, 2492  
    – present-day 2457  
    – regional variability 2459  
    – rise 2460  
    – variability 4910  
    – variations 2455  
  – ranching 6388, 6398  
  – spray 124  
  – state 7402  
  – vegetables 9112  
  – water 8390  
    – radionuclides 8390
- sea surface 7246  
  – height (SSH) 4577  
  – saturation specific humidity 7246  
  – temperature 2134, 2138, 2500, 2517, 3213, 4915, 4917–4920, 5866, 6742, 7248, 7304, 9701  
    – anomalies 2138, 7304, 8930  
    – Argo system 4918  
    – climate forecasts 4918  
    – long-term warming 4919  
    – satellite radiometers 4915  
    – satellite sensors 4917  
    – spatial mean temperature 4920  
    – subsurface thermal information 4915
- seabass 519
- seabed pockmarks 6412
- seabirds 3569
- seabream 519
- SEAFarm 10325–10327
- seafloor 5863, 5865, 6408–6410, 6412, 6419, 6423  
  – bathymetry 5865  
  – documentation 6410  
  – electro-optic cables 7287  
  – life 6408  
  – macrofauna 6409  
  – mapping 6423  
  – remote sensing 6412  
  – temporary anoxic conditions 6419
- seafood 513–514, 534, 540, 543, 550, 560, 574, 838, 3579, 5050, 5893–5894, 5896, 5898, 6400, 6759–6760, 7386–7387, 9080–9081, 9086, 9089–9093, 9095–9096, 9099, 9101–9102, 9104–9105, 10317–10318, 12020, 12032  
  – alternative sources 3579  
  – antimicrobial drug contaminants 9090  
  – aquaculture-derived 9081  
  – bacterial pathogens 9086  
  – bio-preservation 9101  
  – biotoxins 9102  
    – detection 9095  
  – commodities 5896  
  – constitutes 9080  
  – consumers protection 9102  
  – consumption 838  
  – contamination 5050, 9081  
  – crisis 3556  
  – detection  
    – of biotoxins 9093  
    – of microbial pathogens 9096  
    – of norovirus 9105  
  – drug residues 9096  
  – food safety hazards 9081  
  – foreign imports 7387  
  – heat cold pasteurization 9104  
  – high hydrostatic pressure 9104  
  – histamine-producing bacteria 9101  
  – inadequately prepared 12032  
  – individually quick frozen 9104  
  – industry 543, 9092  
  – organochlorine compounds 9090  
  – parasite-free 12020  
  – parasite-infected 9089  
  – post-harvest-processing (PHP) 9104  
  – production 5898, 6400, 10328  
  – public safety 9091  
  – regulatory agencies 9091  
  – regulatory authorities 9099  
  – safety 2266–2267, 9079, 9093, 9099  
  – scombrototoxin 9101  
  – storage 9086  
  – supply 6760, 7387  
  – sustainability 534, 5893, 10324  
    – consumer demand 10324  
  – system 10323–10324, 10327–10330  
    – business model 10327  
    – economic sustainability 10327  
    – economy of scale 10330  
    – hatchery capacity 10330  
    – infrastructure 10329  
    – operational efficiencies 10328  
    – sustainable energy alternatives 10327  
  – toxic heavy metals 9089  
  – toxin detection 9093, 9104  
  – trade 540  
  – value chain planning 574  
  – *Vibrio* 9099, 9102  
  – watch cards 574
- seafood-associated health hazards 9104  
  – detection methods 9104
- seafood-borne disease/illness 7384, 9080, 9086, 9104  
  – biotoxin-linked 9104
- seafood-borne pathogen 9099
- seafood-borne poisoning 9083
- sealed lead acid (SLA) battery 774
- sea-level change 3233
- sealless tubular cell 9857
- seam 12087
- seamless prediction 635, 2524
- sea-salt 115, 125
- Seasat-A Satellite Scatterometer (SASS) 8932
- seascape 560

- seasonal
  - affective disorder (SAD) 9620, 9666
  - climate 2120, 2134
    - forecasting 9320
  - forecasting 2119, 2122
  - prediction 2144
  - snow 289, 2762
- sea-vegetable 9111
- seawater 2899, 2904, 2919, 3455, 5050, 7230, 7233, 8668, 11874, 11887
  - carbonate system 7233
  - concentration of CO<sub>2</sub> 7230
  - contamination 5050
  - desalination 2324, 2897, 3455, 11874
  - direct cooling 4153
  - dissolution of CO<sub>2</sub> 7233
  - osmotic pressure 2919
  - radiocarbon samples 8668
  - reverse osmosis (SWRO) 2904, 2910, 2911
    - filtration process 2910
    - network model 2911
    - operational models 2910
  - temperature 4910, 7307
    - measurements 4910
    - monitoring 4910
- seaweed 518, 520, 547, 549, 551, 555, 559, 6312, 9109–9112, 9114–9116, 9118–9120, 9122–9123, 10326
  - air-agitated tank culture system 9120
  - aquaculture 7266, 9109, 9115, 9119
  - biotechnology applications 9115
  - crop 9116
  - cultivation 555, 9116
  - dermatitis 12047
  - ecosystems services 9118
  - exploitation 9123
  - feed stocks 9123
  - forced cultivation 9116
  - genetic transformation 9123
  - land-based aquaculture 9110–9111
  - land-based cultivation 9118, 9122
  - morphology 9111
  - nutritional value 9112
  - past and present uses 9112
  - physiology 9119
  - porphyra 9114
  - production 9110, 9118
  - successful on-land cultivation 9120
  - taxonomy 9115
  - undaria 9114
- sebaceous gland adenocarcinoma 11404
- Sebekidae* 12040
- secondary aerosol formation 111
- secondary air injection 4960
- secondary battery 741, 743, 745, 749, 759, 766
  - cathode 759
  - cost 745
  - cycle life 741
  - efficiency 741
  - insertion compounds 743
  - lithium–metal salt 766
  - with aqueous electrolytes 749
- secondary combustion chamber (SCC) 4969
- secondary electron 5564
- secondary energy carrier 1205
- secondary ionizing radiation 8472
- secondary lithium batteries 8720
- secondary organic aerosol (SOA) 120, 8882, 8888
- secondary pollutant 7823
- sediment/sedimentary 1638, 3044, 3045, 3047, 3709, 3723, 3742, 3744, 3753–3754, 3757–3758, 3760, 3762, 10967, 10968
  - adsorption 10967
  - basins 4165, 4186, 4331
  - budget 3762
  - contamination 3044
  - control
    - measures 3753
    - of upstream sources 3045
    - strategy 3742
  - deposition 3758
  - desorption 10967
  - in situ remediation approaches 1638
  - isotope tomography (SITS) model 3739
  - management 3047
  - output 3744
  - overloading 3045
  - oxygen demand (SOD) 5679, 5688
  - redistribution 3723
  - resuspension 3044
  - rock 7046
  - shortage 3047
  - source 3742
    - fingerprinting techniques 3742, 3760
    - types 3742
  - storage 3709
  - transfer 3742
    - to the channel network 3757
  - transport 2058, 9136
    - by a river 3754
    - dynamics 3744
    - rates 10968
  - trap 3741, 3753
- sedimentation rate 3734
  - overestimation 3734
- sedimentation 1965, 3705, 3708, 3710, 3724, 3739–3740, 7033
  - from surface water (SW) to deep water (DW) 7033
  - in depositional sinks 3724
  - quasi-continuous 3740
  - soil erosion 3708
  - traps 3739
  - use of fallout radionuclides 3710
  - water erosion 3708
- sediment–water interface 3738, 9128, 9129, 9133–9141, 9144
  - biodiffusion coefficient 9139
  - Brownian transport 9139
  - calculated fluxes 9140
  - chemical transport 9129
  - colloid Brownian diffusivity 9139
  - color images 9129
  - compartment 9133
    - concentration 9137
    - model 9144
  - Darcian water advection 9139
  - environmental models 9137
  - flux
    - behavior 9141
    - equation 9135, 9136
  - interface compartment (IC) model 9140
  - Lavoisier mass balance 9138
  - molecular diffusive transport process 9134
  - multimedia compartment (MMC)
    - flux equation 9138
    - model 9140
  - net flux 9133
  - resistance-in-series (RIS) model 9140
  - simulation methods 9138
  - transport process theories 9133
- sedum 4711, 4732, 4749
- see green roof 4705
- Seebeck effect 1415, 5539
- seed 2710, 4553–4554, 4558, 9147, 9152, 9154
  - bank dormancy 9153
  - biomass 4553
  - dormancy 9145, 9146, 9154
  - germination 9147, 9152
  - growth 4558
  - inventory management system (IMS) 6699
  - lots 9151
    - falling number (FN) test 9151
  - maturity 9147
  - morphology 3291
  - production regulations 10779
  - quality 2649



- shattering 2710
- water concentration 4554
- seedling resistance 2565
- SEFABAR project 409
- segmented gamma scanning (SGS) 7208
- seismic
  - design codes 3250
  - event 3508
  - liquefaction 2793
  - network 11624
  - path measurements 11635
  - waves 2424
  - zoning maps 2428
- seismicity 2793, 11630, 11646
  - induced 2793
  - reservoir-triggered 2793
- seismographic network 2429
- seismological eruption 11643
- seismology 11635
- seismometer 4216, 11635
- selectable marker gene 2597
- selected water quality parameter 11925
  - correlation analysis 11925
- selection index 423, 425–426, 436, 1780, 2786
  - drawbacks 426
- selection-induced genetic variation (SIGV) 8322
- selective breeding 390, 10865, 10840, 10868
- selective catalytic reduction (SCR) 267, 933, 1333, 2254, 4769, 4984, 5263, 6849, 8091, 8362, 8366, 11849
- selective catalytic remover 11806
- selective noncatalytic reduction (SNCR) 1333, 6483, 8362, 8365
- selenium 838–839, 1686, 1691, 3774
  - deficiency 839, 1686
  - toxicity 1686
- selenocysteine 3666
  - methyltransferase (SMT) 1714
- selenoenzyme 1686
- selenol 3666
- selenomethionine 1691, 1715
- selenoprotein 837, 1713, 7356
- selenosis 1687
- selexol 1590, 2153
- selexol-washing technology 1621
- self-pollinating plant 8045
- Sellafield 8389, 8408
  - signal 8667
- semen cryopreservation 648
  - in avian species 648
- semiconductor 7892–7895
  - alloy 7895
  - cocatalyst deposited 7893
  - composites 7895
  - detectors 5566
  - doping 7894
  - dye-sensitized 7892
  - semiconductor silicon 9197
- semidry reactor 4960
- semidwarfing gene 4073
- semiempirical mass formula 3793–3794
- semiochemical 5452
- semivariogram 9753
- semi-volatile micropollutant 5240
- semivolatile organic compound (VOC) 111
- sendai virus (SV) 6157
- sensible heat 2370, 10557
  - storage 10552, 10565, 10568
  - in solid media 10568
- sensor 3172, 3175–3176, 3179–3180, 8920
  - alignment 11461
  - architecture 3172
  - calibration 3176, 3179
  - coarse registration 3179
  - configuration 11461
  - data alignment 3176
  - fine registration 3180
  - fusion architecture 6957
  - geometry 3175–3176
  - satellite-based 8920
  - technology 2484, 6954
- sensorweb 8950
- sentinel
  - habitats 9157, 9167–9169
  - coral reefs 9168
  - tidal creeks 9169
  - marine species 9157
  - species 9163, 9165, 9169
  - elucidating mechanisms for toxicity 9165
  - establishing pathogenicity 9165
  - harmful algal bloom (HAB) toxins 9163
  - risk assessment 9169
- separation of isotopes by laser excitation (SILEX) 5643
- Separion separator 8725
- septic tank 1148
- septicemia 5054, 5063
  - treatment 5063
  - *V. vulnificus* 5054
- sequence
  - analysis 2699
  - haplotypes 6431
  - information 8
- sequential batch reactor (SBR) 11956
- sequential combustion 6822, 6849
- sequential extraction test (SET) 2439
- sequestration 1909
  - science 2159
  - deployment challenges 2159
- serine
  - acetyltransferase (SAT) 1696
  - proteinase 4029–4031
- Seriola rivoliana* 3565
- serpentine 1914
- sertraline 4624
- serum calcium homeostasis 9654
- service reliability 104, 106
- sewage
  - gas 6806
  - sludge 2279, 5244
  - sludge ash 4873, 4874, 11704
  - application in agriculture 4873
  - sludge incineration 4868, 5277
  - multiple hearth furnaces (MHFs) 5277
  - treatment facility 5760
- sewer and water treatment infrastructure system 4153
- sex-specific transgenerational effect 3257
- sexually transmitted disease 5354
  - SI model 5354
- shade leaf 2623
- shading 2861, 3682, 3688–3689
  - geometry 7654
  - light shelves 3689
  - overhangs 3689
- shadow effect 9801
- shaft furnace 5273
- shale
  - combustion 7482
  - gas 7452
  - oil 7452, 7454, 7474
  - pyrolysis 7474
  - recovery 7480
- shallow combustion 1358, 1365
- shallow-dose equivalent 3026
- Shannon-Wiener diversity index 3273
- shared climate policy assumption (SPA) 5422
- shared socio-ecosystem pathway (SSP) 5422
- shark 3567
- sharpless epoxidation 7602
- shear web 12211
- sheep 1758, 1765, 1775
  - body louse 1758
  - breeding 1760, 1763, 1776
  - diseases 1758
  - genetic evaluation 1775
  - genetic resource management 1765
  - meat production 1752
- sheet 292
  - erosion 3709

- shellfish 534, 1949, 4822, 4824, 6311, 9178–9179
  - aquaculture 7266, 9174–9175, 9185, 9188, 9190
  - best management practices 9185
  - sustainability 9188, 9190
- biodiversity 9179
- culture 1943, 6766, 9176, 9180, 9182, 9189
  - benthic effects 9189
  - evolution of sustainability 9180
  - industry-led initiatives 9182
  - integrated multi-trophic aquaculture (IMTA) 9182
  - interactions 9176
  - pelagic effects 9189
- exotic species 9178
- filtration capacity 9178
- integrated land-based cultures 6311
- structures 9179
- Sherwood relation 10538
- Shiga toxin 5060
- Shigella* 499, 5051, 5059
- shigellosis 5060
- shikimate–3-phosphate 10717
- shikimate 10717
- Shinkansen train 4932, 4935
- ship stack emission 138
- ship track 138
- shipping emission 246
- shipping model 258
- Shockley-Queisser limitation 7575, 9416
- shoreline morphology 2460
- short-rotation
  - coppice (SRC) 6021
  - forestry 1575
  - wood 1603
- shortwave
  - global irradiance 9726
  - radiation 9674, 9741
  - solar spectrum 9714
- SHOTS project 8681
- shrimp 575
  - farming 1929, 1942, 7387
  - industry 6183
- shrinking city 5837, 5839, 5846, 5849, 5851, 5853
  - spatial planning strategies 5849
- shrinking population 5839
- shrinking urban region 11362
- shutdown corrosion 4250
- shuttle-cock battery 11519
- sialic acid 8050
- sick building syndrome 3679, 5335, 10268, 10267, 10272
- side-caster 3038
- sideromycin 507
- siderophore 507, 6379
- sideslip angle 3053
- sieves 2198
- sifting 4970
- sign driver assist system 3126
- signal priority 99
- signal-controlled intersections 1884
- signaling 3637
- signum function 55
- silage maize 1117–1119
  - cold tolerance 1118
  - late maturity 1118
  - Southern European lines 1119
- silanol 8604, 8614
- Silceram ceramics 11604
- silica
  - gel 4604
  - geothermometry 5223
  - sand 7812
- silicate 8604
  - waste 11604, 11606
  - weathering 2118
- siliceous algae 1925
- silicoaluminophosphate (SAPO) 2249
- silicon 2563, 6091, 6142, 6380, 9198, 9203, 9293–9294, 9303, 9308
  - anode 9294, 9297, 9306, 9309–9311
  - closed-circuit voltage (CCV) 9297
  - cycle life 9297
  - cycling stability 9311
  - delithiation 9294
  - effect of electrolytes 9309
  - effect of succinic anhydride 9309
  - electrochemical lithiation 9294
  - galvanostatic intermittent titration (GITT) 9297
  - quasi-open-circuit voltage (QOCV) 9297
  - salts 9310
  - SEI formation additives 9309
  - sodium carboxymethylcellulose–based binder 9306
  - solvents 9310
  - band gap 9209
  - biogeochemical cycle 6380
  - carbide cladding 7197
  - cell 9224, 9225, 9681
    - non-concentrating 9224
    - multiple photolithography steps 9225
  - elastomers 7724
  - electrochemical alloys 9294
  - electrode 9308
  - feedstock 9198
  - heterojunction solar cells 9228, 9230
  - gases 9435
  - filaments 7957
  - modules 9438
  - monoxide (SiO) 9203, 9304
  - nanoparticles 9293, 9303, 9304
    - one-dimensional 9304
  - nanostructures 9293
  - nanowires 9293, 9303
  - nitride 9230
  - oxide 9220, 9230
  - photodiode instruments 9682
  - production 7956
  - ribbon 9206
  - rubber 3003
  - sheets 9207
  - solar cell 7946, 7953, 9196–9197, 9226, 9232, 9233, 9240, 9273, 9280–9283
    - boron-diffused front emitter 9232
    - cell designs 9282
    - cell optimization 9273
    - cell structures 9280
    - crystallographic defects 9226
    - light-induced degradation 9281
    - materials 9281
    - modules 9280
    - monocrystalline 9233
    - monocrystalline cells 9226
    - multicrystalline 9233
    - n-type mc-Si cells 9232
    - optical enhancement 9273
    - optoelectronic properties 9282
    - performance issues 9280
    - production technology 9283
    - semiconductor properties 9282
    - thin-film 9240
    - wafer-based 7946
  - surface texturization 9216
  - wafer 7957
- silicon/carbon
  - composites 9300–9301
    - ball milling 9300
  - deposition of silicon on mesocarbon microbeads (MCMB) 9301
    - high-temperature pyrolysis 9300
  - nanotube composites 9301
- silicosis 11135
- siloxanes 1094
- Silso 9204
- silt density index (SDI) 10531, 10539
- silver halide photography 11107
- silver vanadium oxide 6087, 6508
- silver–zinc battery 748

- simian immunodeficiency virus (SIV) 5000, 8146
- simple hot box oven 9493
- simple jet 10977
- simple natural ventilation (SNV) 6884
- simple plume 10978
- simple sequence repeat (SSR) 6696
- Simpson's diversity index 3273
- simultaneous saccharification and fermentation (SSF) 993
- sine wave 12080
- single nucleotide polymorphism (SNP) 400, 416, 480, 1737, 1779, 2965, 6696
- single stage partial oxidation (PROX) 8222
- single-copy transformant 10684–10685
- single-copy transgene 10680
- single-crystal (SC) 6848
  - superalloy 6848
- single-crystalline
  - cell 9201
  - silicon wafers 9203
- single-flash power station 4279, 4298
- single-ion conductor 6053
- single-nozzle (diffusion flame) combustor 6840
- single-nucleotide polymorphism (SNP) technology 4088
- single-occupant vehicle (SOV) 1901, 4946, 5022
- single-scattering albedo (SSA) 11155
- single-step adiabatic steam separation 5230
- single-stranded RNA virus 11985
- single-vehicle tree 2481
- sinkhole 3553, 5648–5650, 5652–5653, 5668
  - collapse 5648, 5650, 5652, 5653
  - warning signs 5652
  - development along highways 5649
  - formation in roadway ditches 5652
  - opening improvement/protection 5668
  - rock pad 5657
  - surface mapping 5662
- sinorhizobium 1193
- sinter-crystallization 11602, 11606
- SION1 alkaline ionomer 380
- SIR model 1938, 5348
  - with vaccination 5348
- sire 483
  - heterozygous 483
  - model 469
  - variation 483
- Sirius model 2554
- site index 3290
- Six-City Study 225, 226
- skimmer pump 10146–10147
  - sustainable features 10147
- skin cancer 3611, 3645, 9661, 9663
  - etiology 9663
  - UV-induced 9663
- skin-reddening 9658
- sky
  - luminance 2818
  - radiance 11382
  - radiation 9674, 9691
  - view factor (SVF) 11269
- skylight 2806, 2825
- slab
  - earthquakes 3237
  - ocean 2514, 2516
- slag/slagging 1340, 1345, 4855
  - incineration 5281
  - utilization 4003
- slagceram 11601
- slagsital 11601–11602
- sleep disturbance 2829
- SLI battery 5882
- sliding charge furnace 1380
- sliding-mode control 52
- slimhole-drilling 4387
- slip angle 3057
- slope failure 3250
- SLOSS (single large patch or several small patches) principle 948
- slow neutron 5568
- slow pyrolysis 1518, 1526
  - principles 1526
  - process technology 1526
- slowly rotating generator 12152
- sludge 1177–1178, 1182, 6314
  - conditioning 4874
  - incineration 4875
- slurry 1226, 9580
  - bed reactor (SBR) 3971, 3976
  - hydrogenation 2229
  - jets 10992–10993
  - of organic matter 1226
  - SlurryCarb™-process 1080, 1082–1083
- small angle X-ray (SAXS) diffraction 7771
- small business liability relief 2011
- small interfering RNA (siRNA) 2970, 10703
- small modular reactor 7192
- small secure transportable autonomous reactor (SSTAR) 4055
- small solar power system (SSPS) 2369
- small stock breeding 1770
- small ungulates 11404
- small wind turbine 3397–3399, 3403, 3405, 3406–3409, 3411, 3413
  - costs 3405
  - inspection and maintenance visit costs 3408
  - of energy 3406
  - of foundation and installation 3407
  - operation and maintenance costs 3407
  - replacement costs 3408
  - tower costs 3407
- feasibility 3398
- generic design requirements 3413
- noise 3403
- on rooftops 3409
- operating on buildings 3411
- technology 3399
- vibrations 3403
- small-bus services 1877
- small-for-gestational-age effect 3639
- smallpox 8126, 8150, 8160
  - vaccine 8075
- small-scale combustion unit 1351
- small-scale heat and power system 1404
  - conversion technologies 1404
- smart community 10472
- smart electric grids 10933
- smart garage 7859
  - demand 7859
  - electric power capacity 7859
- smart grid 3013, 3021, 3393, 3396, 9333–9334, 10449, 10451–10452, 10454, 10457–10462, 10464–10470, 10472, 10474, 10476, 10935, 10937, 10947
  - barriers to the deployment 10451
  - customer privacy protection law 10467
  - deployment 10451, 10476
  - development 10451
  - distributed control 9334
  - dynamic pricing 10462, 10464, 10466, 10468
  - energy storage systems 10457
  - European technology platform 10474
  - feed-in tariffs 10457
  - funding mechanisms 10470
  - government agencies 10459
  - initiatives 11185
  - interconnection standards 10460, 10464, 10467
  - international collaboration 10474
  - investments 10452
  - legislation 10458, 10461, 10468
  - net metering 10454, 10465–10466
  - policies 10449, 10454, 10458, 10459, 10472, 10476
  - frameworks 10451
  - in Italy and the UK 10470
  - of the European Union 10468
  - of the United States 10459
- proactive grid management 10449

- renewable electricity standards (RES) 10457
- smart metering targets 10466, 10467
- standards 10469
- technologies 8994, 10449
- wide-area blackouts 10937
- smart grip 10454, 10456
  - demand response 10456
  - dynamic pricing 10456
  - interconnection standards 10454
  - smart metering targets 10456
- smart metering 10456, 10466, 10472, 10476
  - commercialization 10472
  - targets 10461, 10464
- SmCo magnet 26, 30
- Smith cycle 4328
- smog 141, 208, 6808, 8349, 8881
- smoke detectors 8525
  - ionization-based 8525
- smoking 10638
- smooth-pursuit
  - control 54
  - movement 49, 51
  - state-space control 51
- snow 289, 2761, 2764–2766, 3217–3218, 9636
  - ablation 2765
  - accretion 2765
  - accumulation 2765–2766
  - blindness 11388
  - cover fraction (SCF) 3219
  - heat storage 3217
  - interception capacity 3218
  - models 2764
  - water 3219
- snowpack 2762
- SNP marker 387
- social carrying capacity 1968, 1971
- social genetic effect 9361
- social network analysis (SNA) 1939
- social resilience model 2931
- social urban infrastructure 5846
- social-ecological system (SES) 1969, 3319, 3351
- sociocultural information 11358
- socio-ecological system 940, 3312
- socioeconomic 4528
  - models 2112
  - status 213
  - influence on health 213
- socioeconomic sustainability 10320
- socio-technical system (STS) 12220
- sod roof 4701
- soda-lime glass 11607
- sodar 6594
- sodium 765, 7330
  - chloride 5316
  - fire 2369
  - fluorescein 9012
  - hypochlorite 10653
  - nitrate 10572
  - silicate-activated slag (SSAS) cement 4404
- sodium-beta battery 680, 11518
- sodium-cooled fast reactor 4060
- sodium-sulfur battery 678, 765
- soil cultivation 155
- soil decontamination technologies 10424
- soil 849–850, 876, 1103, 1137, 1287, 1536, 1557, 1634, 1635, 1638, 2430–2433, 2564, 3213–3214, 3217–3218, 3220–3221, 3224, 3708–3709, 3718, 3722, 3750, 3775, 7670, 7674, 7675, 7678–7679, 7685, 8610, 9067, 10407, 10967, 10968
  - adsorption 10967
  - architecture 7684
    - transfer of microbes 7684
  - biology 151
  - carbon 3224, 3707
  - cavities 5649
  - colloid-associated transfer 7679
  - constituents 2432
  - contaminants 2433, 2435, 10404
    - halogenated organic compounds 2435
    - metals and metalloids 2435
    - radionuclides 2435
  - contamination 2430–2431, 2440, 4794, 8796
    - destruction technologies 2440
    - extraction technologies 2440
    - immobilization technologies 2440
    - removal technologies 2440
  - cultivation 155
  - decontamination technologies 10424
  - defecation 7670
  - desorption 10967
  - erosion 163, 3584, 3706–3708, 3724–3725, 3727, 3749, 3751–3752, 7675
    - annual cost 3708
    - countrywide survey 3751
    - field scale investigation 3749
    - quantification of soil redistribution 3725
  - evaporation efficiency 3214
  - ex situ approach 1634
  - fallout radionuclides 3718
  - fertility 1137, 7668
  - flushing 2448
  - gaseous phase 2433
  - geochemical processes 7675
  - heat storage 3217
  - hydrology 3213
  - in situ remediation approaches 1638
  - mellowness 1103
  - mineralogy 8604
  - minerals 2432, 8608
  - moisture 3213, 3220, 3221, 4137
  - nutrient 155
    - transfers 7674
  - organic amendments 2564
  - organic carbon sequestration 1287
  - organic matter (SOM) 3782, 8606
  - origin 2432
  - particle associated transfer 7679
  - pathogen transfer 7674
  - phosphate adsorption 7685
  - pH 876
  - physical characteristics 876
  - pore-size distribution 850
  - properties 2432
  - quality 1536
  - redistribution 3708–3709, 3718, 3722, 3725–3726, 3745, 3750
    - conversion models 3726
    - qualitative information 3726
    - sampling fields 3745
  - remediation 2431–2432, 4797, 10407, 10429
    - Based on Natural Processes 10429
  - resources 9067
  - restoration 1557
  - saturation state 2432
  - salinity 5316
  - soil and water assessment tool (SWAT) model 1942, 5826
  - solarization 2577
  - sorption theory 7678
  - structure 7668
  - surface complexation modeling (SCM) 8610
  - systems 7668
  - temperature 3218, 3224
  - testing 3775
  - thermal diffusion 3217
  - total petroleum hydrocarbon (TPH) levels 1635
  - transfer of water 7674
  - transpiration efficiency 3214
  - transport rates 10968
  - vapor extraction (SVE) 2446, 10147
  - washing 2449
  - water 3220
    - freezing 3220

- soil–cell interactions 7679
- soil–root–microbe interactions 2734
- soil:solution ratio 8618
- soil–structure interaction 2427
- soil-to-plant transfer factor (TF) 8615
- soil-transmitted helminths (STH) 12007
  - deworming 12007
  - lymphatic filariasis (LF) elimination program 12007
  - treatment 12007
- soil–water–atmosphere–plant model (SWAP) 9324
- sol particle immunoassays 5383
- solar absorber 9457
- solar activity 2101, 9475, 9707
- solar air
  - preheating 2371
  - system 7662
- solar aluminum processing 9609
- solar beam 10625
- solar cavity–receiver 9593
- solar cell 1976, 6568, 6576, 6578, 7578, 7938, 7944, 7949, 9197, 9201, 9215, 9217–9218, 9220–9223, 9225, 9227–9229, 9231, 9241–9243, 9245, 9260, 9262, 9264–9265, 9271, 9273, 9276–9278, 9282, 9394, 9398, 9412, 9432
  - aluminium alloyed rear emitter 9231
  - alkaline etching process 9217
  - a-Si:H-based 9260
  - back reflectors 9276
  - back surface field (BSF) 9221
  - chalcopyrite-based 9394
  - chalcopyrite-type compounds 9400–9402, 9405–9408
    - absorber fabrication processes 9401
    - coevaporation processes 9402
    - efficiency 9407
    - epitaxial layers 9402
    - grain boundaries 9400
    - junction formation 9406
    - large-scale production 9406
    - limitations 9407
    - modification of the material system 9408
    - multinary alloys 9401
    - perspectives 9407
    - role of sodium 9400
    - single crystals 9402
    - substrate configuration 9405
    - surface properties 9400
    - vacuum evaporation methods 9402
  - collection of photocurrent 9398
  - commercial development 6578
  - crystalline silicon wafers 9201
  - degraded steady state (DSS) 9262
  - dye-sensitized 6568
  - efficiency value 9278
  - emitter wrap through (EWT) technique 9223
  - end of life efficiency 9276
  - energy payback times 9432
  - environmental issues 9432
  - fill factor 6576
  - heterostructures 9229
  - hydrogenated amorphous silicon 9241
  - interdigitated back contact (IBC) 9222
  - isotropic texturization 9218
  - light-induced degradation 9264
  - limitations on the operation 9271
  - mc-Si-Based 9225
  - metallization
    - techniques 9221
    - wrap through technique (MWT) 9223
  - monocrystalline Cells 9223
  - multi-junction cells 9276
  - multi-junction structures 9242
  - nanocoax-based 9282
  - N-type silicon-based 9228
  - optical enhancement 9273
  - optimization 9273
  - photogenerated carriers 9398
  - plasma texturing 9220
  - plastic-encapsulated 7578
  - PLUTO technology 9227
  - principles of cell operation 9265
  - production companies 7949
  - p-type UMG-mc-Si-based 9227
  - reactive ion etching (RIE) texturization 9220
  - reproducibility of cell fabrication 6578
  - silicon surface 9215
    - antireflection coating 9215
    - texturization 9215
  - single-junction p-type silicon-based 9215
  - stability 6578
  - Staebler–Wronski effect (SWE) 9241
  - technology 7938, 7944
  - thin-film material 9245
  - triple junction stacked cells 9277
  - very high efficiencies approaches 9412
- solar central receiver plants 10573
  - regenerator storage 10573
- solar chemical heat pipe 9606–9607
- solar chemical technologies 2381
- solar collector 907, 6032, 9449–9450, 9452–9456, 9458–9460, 9464–9466, 9511, 9513, 9519, 9532, 9541, 9764, 10564–10565, 10573
  - absorber 9456
    - material 9458
  - air-heating collectors 9466
  - construction 9456
  - covered liquid-heating flat-plate collectors 9464
  - efficiency
    - curves 9454
    - factor 9459
  - evacuated tube collectors 9465
  - fields 6810
  - fin-and-tube constructions 9459
  - functioning 9452
  - heat pipe 9465
  - heat removal
    - construction 9458
    - tubes 9459
  - housing elements 9460
  - instantaneous efficiency 9453
  - loop constructions 9466
  - mean temperature 9455
  - non-concentrating 9449
  - optical losses 9452
  - perforated absorber 9466
  - Sidney tube 9465
  - stagnation temperature 9454
  - thermal losses 9452
  - transparent cover 9459
- solar combination store 10556
- solar concentration 9418, 9420
  - ratio 9591
- solar conditioning 4133, 4142
- solar constant program 9707
- solar constant 9469–9470, 9621, 9676, 9697, 10163
- solar cooker/cooking 9486, 9490, 9492–9494, 9498–9499, 9502, 9505, 9506
  - advantages 9506
  - cash saving 9505
  - cum dryer 9499
  - cum water heater 9498
  - energy saving 9505
  - environmental aspects 9505
  - human health 9505
  - hybrid concentrating model 9502
  - social aspects 9505
- solar cooling 9450, 9510, 9515, 9534, 9540, 10560
  - applications 10560
  - common system designs 9515
  - cost performance 9534

- system 9509, 9510, 9540
  - conversion chains 9510
  - cost effectiveness 9540
  - economical assessment 9540
  - energy balancing 9540
- plants 9550
- solar cosmic rays (SCR) 8472
- solar cracking 9604
- solar cycle 9472, 9475, 9479, 9483
  - signal 9799, 9806
- solar dermatosis 11400
- solar desalination 9760
  - using multi-stage desalination with heat recovery 9760
- solar detoxification 9562
- solar dish 2351
- solar disinfection 9579
  - of water 9562
- solar driving energy 9534
- solar dryer 9486, 9487, 9759
- solar electricity 1981, 1997, 8373
  - cost-effective production 1997
- solar electromagnetic radiation 9797
- solar electromagnetic spectrum 9706
- solar elevation angle 9712
- solar energetic particles (SEP) 9797, 9810
- solar energy applications 11391
- solar energy 1233, 1370, 1477, 1977, 3306, 3466, 4691, 5174, 6566, 7641, 7661, 7936, 8976, 9412–9413, 9457, 9487, 9588, 9731, 10556
  - absorptivity 9457
  - applications of water storages 10556
  - by photovoltaics 4691
  - collection 9614
  - conversion 5176, 9412
  - conversion efficiency 9413–9415
    - blackbody limit 9413
    - Carnot limit 9413
    - electrical losses 9415
    - Landsberg limit 9414
    - multicolor limit 9414
    - nonradiative recombination 9415
    - optical losses 9415
    - Shockley–Queisser (SQ) limit 9413, 9415
    - systems 9692
    - thermal losses 9415
    - thermodynamic limits 9413
    - time reversibility 9414
  - drying 9487
  - economy 9766
  - input 4135
  - in thermochemical processing 9588
  - limiting efficiency 9413
  - management 2887
  - photovoltaic conversion efficiency 9412
  - potential 9646
  - Shockley–Queisser model 1977
  - transmission 2850–2851
- solar forcing 9808
- solar fraction for cooling 9537
- solar fuel-cell technology 7611
- solar fuel 2382, 9589–9590
- solar fullerenes 9610
  - synthesis 9610
- solar gain 896
- solar generation 8984
- solar geoengineering 4108
- solar geometry 915, 9711
- solar glass 9459
- solar heat 9511, 10564
  - gains 3686
- solar heating 906, 3694, 9450, 10560
  - applications 10560
- solar house 7641, 7646
- solar hydrogen photocatalysis 5180, 5211
  - iron-based system 5180
- solar hydrogen production 3414, 5174–5175, 5187, 5190–5193, 5195, 5201, 5205, 5211–5212
  - biomimetic iron hydrogenase 5187
  - cobalt CATs 5212
  - direct water reduction 5195
  - light absorption 5175
  - multicomponent co-based systems 5201
  - photocatalysts 5190, 5212
  - photocatalytic activity 5211
  - Pt and Pd-based homogeneous systems 5205
  - rhodium-based supramolecular photocatalysts 5190–5193
- solar industry association 8384
- solar insolation 10564
- solar instrumentation 9692
- solar irradiance/irradiation 2766, 8382, 9619–9621, 9640, 9647, 9677, 9756, 9806
  - accuracy 9640
  - at the top of atmosphere (TOA) 9620
  - distribution 9647
  - energy 2363
  - flux density 9621
  - global distribution 9619
  - meteorological modeling 9756
  - regional climate effects 9806
  - uncertainty 9640
  - world standard group (WSG) 9677
- solar light energy 6568
  - bulk heterojunction 6568
- solar lime 9611
- solar luminosity 9620
- solar magnetic cycle 9797
- solar measurement 9693
- solar modules 9280
- solar multivoltage cooker 9496
- solar output 9799
- solar oven 9507
- solar particle event (SPE) 8577, 8578, 8586
- solar photocatalysis/photocatalytic 9568, 9582
  - detoxification process 9565
  - disinfection 9564–9565, 9580
  - processes 9581
    - drinking water 9581
    - water treatment 9582
- solar photo-Fenton 9574–9575
- solar photon 9712, 9716
  - scattering effects 9716
- solar photoreactor 9570, 9577
- solar photovoltaic 4244
  - generation 9335
- solar physics 9483
- solar pond 10556
- solar power 209, 9592, 9906
  - tower 2349
- solar production 9594, 9603, 9608, 9612
  - of fuels 9594
  - of high-purity lime 9612
  - of H<sub>2</sub> from fossil fuels 9603
  - of material commodities 9608
  - of metals 9594
- solar radiation 350, 1100, 1140, 1234, 2351, 2372, 2619, 2625, 2814, 7273, 7564, 7621, 7643, 7653, 7913, 8560, 8577, 8924, 9197, 9396, 9428, 9470, 9493, 9649–9650, 9666, 9673–9674, 9676, 9680, 9685–9686, 9688–9690, 9693, 9696, 9705, 9707, 9709, 9711, 9731, 9740, 9743–9745, 9750, 9752–9754, 10621–10624, 10626–10630, 11406
  - calculation procedure 10630
  - components 9674
  - cross-correlation analysis 9753
  - database 10622, 10629
  - digital elevation model 10623, 10624
  - digital surface models (DSM) 10624
  - distribution function 9750
  - earth's atmosphere 9709
  - energy 10118
  - fluctuations 9744
  - flux density 2619
  - for solar energy utilization 9673
  - forecasting 9743
  - ground meteorological stations 10630
  - ground-reflected 10626



- guide to measurement uncertainty (GUM) 9680
- history 9740
- human behavior 9666
- human health 9649
- instrumentation 9676
- management 2115, 4108, 9696, 10118–10120, 10122, 10124–10125, 10161, 10166
  - aerosols in the stratosphere 10118
  - climate model simulations 10120
  - costs 10120
  - history 10119
  - risks 10119
  - stratospheric 10124
  - stratospheric aerosols 10125
  - sunshades 10161, 10166
  - volcanic eruptions 10122
- Markov chain models 9752
- measurement 9685, 9693, 11382
  - scale 9676
- modeled data sets 9690
- modeling topographic effects 10623
- outside of the earth's atmosphere 9707
- parameters 10628
- penetrating a water body 7913
- period of record 9689
- physical models 9688
- rectennas 9428
- r.sun model 10627
- satellite observations 9754
- satellite-based models 9689
- satellite-derived 10629
- small-scale variability 9754
- solar energy conversion 9686
- spatial interpolation 9753
- spatial variability 9744–9745, 9752
- spectral distribution 9743
- spectrum 9705
- statistical analysis 9745
- sustainability 9743
- temporal resolution 9689
- temporal variability 9744–9745, 9750
- time series characteristics 9752
- transmission 9711
  - aerosols 9711
  - clouds 9711
  - through the atmosphere 9711
- triangulated irregular networks (TINs) 10624
- versus climate change 9731
- solar radiative power 9591
- solar reactor 2382, 9599
- solar receiver 2366, 9593
- solar reforming 9605
  - annual energy outputs 9793
  - calculations 9776, 9778
  - collector 9768
    - roof 9771, 9786
  - components 9768
  - computational fluid dynamics (CFD) 9778
  - custom-made thermodynamic simulation code 9789
  - earthquakes 9775
  - electricity generation costs 9792
  - flow redirection 9778
  - generator 9779
  - large-scale plants 9791
  - layout 9776
  - output behavior 9781
  - physical model 9781
  - prototype 9784
  - safety 9780
  - settlement 9775
  - storage 9771
  - technical concept 9767
  - temperature 9775
  - tower 9773
  - turbines 9777
  - vertical wind velocity 9786
- solar roof programme 8383
- solar silicon processing. 9609
- solar spectral irradiance (SSI) 9707
- solar spectrum 9725, 9727
  - standard spectra 9725
- solar steam
  - cooking system 9503
  - gasification 9607
  - reforming 9605
- solar storm activity 8532
- solar surface irradiance 9620, 9628
- solar system 2100
- solar thermal collector 3695, 9461, 9462, 9468, 9518
  - collector types 9461
  - insulation 9461
  - liquid-heating 9468
  - noncovered flat plate collectors 9462
  - reflector 9461
- solar thermal desalination 9758, 9762
  - markets 9762
- solar thermal electricity generation 9591
- solar thermal energy 9458, 9546, 9763–9765, 10551
  - desalination 9765
- solar thermal heating 9450
- solar thermal power 10552
  - plants 2386, 8984, 10557
  - station 2369
- solar thermal recycling 9612
  - of hazardous waste materials 9612
- solar thermal storage 10556
- solar thermal system 9450
- solar thermal tower 2352
  - pollution 2352
- solar thermochemical process 9593–9594, 9614
  - economics 9614
  - environmental impacts 9614
- solar tower 2350–2351, 2387, 9773
  - power plant 9774
  - receivers 2387
  - system 2367
  - technology 2382
    - desalination systems 2382
- solar tracking device 9583
- solar transformation energy 9427
- solar transmittance 3689
- solar ultraviolet radiation 11149–11150
- solar updraft tower 9766–9768, 9771, 9773, 9775–9781, 9784, 9786, 9789, 9791–9793
- solar UV inactivation 9580
- solar UV irradiance 9581, 9652
- solar variability 9799
- solar wall 7657, 7659–7660
- solar water splitting 5175
- solar window 900
- solar wind 8579, 9803
- solar zenith angle (SZA) 3215, 9628, 9630, 11152
- solar zinc processing 9610
- solar-assisted air-conditioning systems 9521, 9558
- solar-assisted cooling system 9535
  - energy balance 9535
  - sensitivity analysis 9535
- solar-driven heat buffer 9538
- solar-electric microwave oven 9495
- solar-generated electricity 9614
- solar-grade
  - polysilicon 7951
  - silicon 7956, 7958, 9204
- solar-hybrid gas turbine systems 2384
- solar-hybrid micro-turbine (SHM) 2372
- solaria for horses 11406
- solar-produced carbon nanotubes 9610
- solar-to-biomass conversion 352, 356
- solgate 2372
- sol-gel synthesis 4602



- Solhyco 2372
- solid acid catalysis 3947
- solid biofuel 1067, 1072, 1085, 1199, 1207, 1209, 1210, 1241, 1492, 2271, 2273, 9821, 9824, 9827, 9831, 9834–9836, 9839–9842, 9844, 9847–9848
  - ash
    - content 9840
    - melting properties 9840
  - bridging properties 9844
  - bulk density 9844
  - calorific value 9834
  - co-combustion 2271, 2273
  - combustion 1210
  - composition 9824
  - deformation temperature 9841
  - dimensions 9842
  - estimating an amount of energy 9835
  - fine matter 9842
  - flow temperature 9841
  - hemisphere temperature 9841
  - impact of ash content 9835
  - main elements 9827
  - moisture content 9836
  - particle density 9847
  - physical-mechanical properties 9841
  - resistance to abrasion 9848
  - shape 9842
  - shrinkage starting temperature, SST 9840
  - size classes 9842
  - thermochemical conversion 1207
  - trace elements 9831
  - volatile matter 9836
- solid biomass 1352, 1416
- solid electrode 745
- solid electrolyte interface (SEI) 710, 6057, 6129, 6137, 9305
  - model compounds 6057
- solid electrolyte interphase (SEI) 6070
- solid fertilizers 3772
- solid fuel 239, 4009, 4769, 5246
  - from waste plastics 4009
- solid ion conductors 8720
- solid mine waste 6666, 6668–6671, 6673, 6675, 6676, 6680
  - acid 6673
  - backfilling 6675
  - disposal facilities 6676, 6680
  - environmental problems 6666, 6673
  - geochemical composition 6668
  - health concerns 6673
  - remediation 6675
  - sources 6669
  - storage/disposal 6671
  - types 6668
  - water contamination 6676
- solid oxide electrolysis (SOEC) 9917
- solid oxide fuel cell (SOFC) 1414, 2934, 2938, 2940, 2950, 2954, 3388, 3851, 3868, 3879, 3884, 3887, 5134, 5138, 5142, 5170, 6811, 7866, 9852, 9854–9855, 9858, 9861–9862, 9865–9867, 9869, 9874–9880, 9885–9889, 9891–9900, 9904, 9907–9911, 9913–9915, 9917–9919, 9922–9926, 9928–9929, 9934, 9938–9939, 9941–9942, 9944, 9947, 9949–9954, 9956, 9962–9964, 9966–9969, 9971, 9973
  - accelerated materials discovery 9894
  - active parts 9934
  - advances in characterization 9879
  - advantages 9910
  - allocation between electricity and heat 9973
  - anode polarization resistance 2950
  - anomalous situation 9869
  - area specific resistance (ASR) 9907
  - auxiliary power units (APU) 9914, 9928
  - balance of plant manufacturing 9969
  - carbon
    - deposition 9874
    - footprint 9942
    - reduction potential 9941
  - cassette-type stack design 9962
  - cell stack 9908
  - CHP installation 9941
  - chromium 9953
  - companies 9918
  - competitiveness 9928
  - components 9963
  - configurations 9887
  - contamination 9867
  - cost 9925
    - in relation to applications 9878
    - issues 9854, 9876
  - CO<sub>2</sub> emission reductions 9939
  - degradation 9866
    - due to gaseous impurities 9876
    - in cell performance 9869
  - development of in situ diagnostics 9895
  - devices 9887
  - different types 9910
  - diffraction measurements 9898
  - distributed generation (DG) 9915, 9928
  - dual proton-oxygen ion-conducting 9889
  - durability 9854, 9865
  - edge effect 9867
  - effects
    - of high conductive electrolyte 9879
    - of minor species 9880
    - of stack weight 9867
  - efficiency 9886
  - electrocatalysts 2940
  - electrode materials 9893
  - electrolyte materials 9891
  - end-of-life treatment 9973
  - energy demand for processing 9962
  - environmental impacts 9967–9968
  - equivalent annual cost (EAC) 9928
  - exhaust gas 9938
  - failures 9866
    - in flow systems 9865
  - feedstock material 9964
  - field tests 9865
  - flexibility 9886
  - forecast the future cost 9926
  - gas distribution 9867
  - heterostructures 9892
  - high power density (HPD) tubes 9919
  - impurities 9875
  - in situ materials characterization 9895
  - integrated planar SOFC concept 9966
  - intermediate temperatures 9886
    - gaseous species 9880
  - lanthanum 9949
  - large central power plants 9929
  - life cycle assessment 9944, 9967, 9971
    - results 9968
  - lifetime 9923
  - lightweight 9962
  - lightweight plasma-sprayed design 9963, 9964
  - loan repayment factor (LRF) 9928
  - long-term operation 9866
  - manganese 9951
  - manufacturing
    - cost calculations 9925
    - of components and cell 9956
  - marketing issues 9904
  - markets 9911
  - materials 9944
  - metal interconnect 9858
  - metal support cells 9862
  - micro-CHP units 9913, 9929
  - micro-fabrication techniques 9888
  - micro-planar 9888
  - 3D microtomography 9899
  - microtubular 9887
  - mixed reactant fuel cells 9887
  - mobile applications 9917
  - net present value (NPV) of 9928

- neutron scattering studies 9896
- nickel 9952
- novel materials 9889
- off-grid 9917
- operation
  - conditions 9869
  - temperature 9862
- oxidation of hydrocarbons 2938
- oxide interconnect 9858
- PowerCore 9909, 9922
- proof of competitiveness 9922
- Raman spectroscopy 9899
- raw materials 9947
- redistribution of current flow 9869
- redox
  - issues 9861
  - stability 9956
- reliability 9854, 9862, 9865, 9924
- sealless tubular cells 9855, 9877
- seals 9861
- secondary power 9917
- sensitivity analysis of power density 9969
- SMMO anodes 2954
- spectroscopic techniques 9898
- stack
  - behavior 9879
  - manufacturing 9963
  - modules 9909
- stationary stack design 9954
- steps in commercialization 9922
- strontium 9950
- sulfur contaminations 9875
- sustainability aspects 9934
- synchrotron
  - diffraction 9897
  - synchrotron X-ray studies 9897
- technology 9907
- test equipment 9900
- thermal cyclability 9956
- yttrium 9947
- zirconium 9947
- solid petroleum coke (petcoke) particles 9607
- solid polymer electrolyte (SPE) 3879, 3881, 6048, 8743
- solid recovered fuel (SRF) 11837
- solid solution
  - geothermometry 5227
  - semiconductor 7895
- solid storage material 10553
  - thermomechanical stability 10553
- solid waste 5304, 5708, 5766, 6670, 8783, 9979, 9981–9984, 9986, 9991–9992, 9995–10000, 10013–10014, 10016, 10019, 10021, 10579, 11655, 11838
  - analysis 8788
    - economic benefits 8788
  - aesthetic degradation 9986
  - biodegradation 9999
  - characterization 10000
  - collecting 9996
  - collection 11655
  - composition 9998
  - composting 9984
  - discarded by humans 5708
  - disposal 9979, 9987, 9995, 9997
    - act (SWDA) 10016
    - on land 5708
    - pollution 9987
    - vectors 9987
  - education 10013
  - energy resource 11838
  - environmental education 10019
  - environmental impacts 10014
  - exchanges 8790
  - generation 10000
    - rate 9998
  - incineration 9986
  - land disposal 9984
  - landfilling 9984, 9996
  - laws and regulations 10016
  - management 8772, 8789, 9981, 9998, 10579, 11656, 11695
    - development 9998
    - hierarchy 8772
    - model 9991
    - separation 11656
    - source activities 11656
    - stabilization wedge 11695
    - storage 11656
    - successful programs 10021
    - system 9996
    - waste hierarchy 11695
  - minimization 8774, 8777, 8789, 10014
    - personal and social benefits 8777
  - open dumping 9996
  - planning framework 10021
  - public involvement 10013, 10021
  - quantities 6670
  - reaction models 5304
  - recycling 9979, 9983, 9995, 9999
    - assessments 8783
  - reduction unit (SWARU) 11791
  - resource depletion 9992
  - reuse 9982
  - source reduction 9981
  - transport(ing) 9996, 11655
  - treatment 5766, 8800
- solid-electrolyte interphase (SEI) 742, 6041
- solidification 2444
- solid-recovered fuel (SRF) 5297
- solid-to-energy conversion bed 5305
- solubility trapping 4123
- solugas 2372
- solute chemical 10964
  - sink rates 10964
  - source 10964
- solute metal 4855
- solvation free energy 3424
- solvent 3934
  - refined coal 2231
- solvent-free molten salts electrolyte 6056
- somatic cells 10897
  - count (SCC) 2967
  - culture infection 10826
  - nuclear transfer (SCNT) 6150, 6153, 6162, 10813, 10817, 10827
    - agricultural application 6153
    - application for livestock 6153
    - factors affecting development of embryos 6162
    - multiplication 6153
- somatotropin 8062
- soot cirrus 662
- sootblower 4978
- SOPERMA
  - monomer 6932
  - polymer properties 6926
- sorghum 1110, 1127, 1272, 1276
  - bicolor 1111
- sorption 11974
  - of organic micropollutants 11974
- sound 12278–12279, 12283, 12289
  - according to frequency 12278
  - attenuation 12283
  - fields 12278
  - geometrical spreading 12283
  - intensity 12277
  - level limits 12290
  - masking 12289
  - power 12277
    - level 12277
  - pressure
    - level 12277
    - variations 12276
  - propagation 12287, 12291
    - calculations 12287
  - waves (seismograph) 7799, 12276
    - cylindrical 12276
    - spherical 12276
    - weighting filters 12279

- sour gas 2237
- sour wastewater 7834
- source water 6611, 6615
  - cryptosporidium 6615
  - pathogen occurrence 6611
- source–sink balance 4554
- source 8519
  - irradiator facilities 8519
  - teletherapy units are 8519
- South Asian monsoon (SAM) 6745
- South Atlantic anomaly (SAA) 8471
- Southern blot hybridization 2603
- Southern hemispheric circulation 6753
- Southern oscillation index (SOI) 6220, 8927
- soybean 577, 1708, 1715, 4435, 4467, 4468, 4530, 5317
  - cost of production 4435
  - ferritin 1715
  - genome 2690
  - glyphosate-resistant 4530
  - herbicide-tolerant 4435, 4468
  - oil 924, 6901, 6904, 6906, 6910, 6925
    - epoxidized 6910
    - monoglyceride methacrylates (SOGLEME) 6902, 6906, 6929
    - pentaerythritol alcoholysis reactions 6904
    - pentaerythritol glyceride maleates 6904
    - with acrylic acid 6901
  - osmotic stress 5317
  - production 4467
- space
  - absolute radiometric reference 9473
  - conditioning 4359
  - cooling 10559
  - gravimetry 2459
  - heating support 9558
  - nuclear power source accidents 8514
  - radiation environment 8471
  - shielding 8541
- space-borne camera 283
- space-borne remote sensing 8940
- spacecraft 4567, 8472
- spallation neutron sources 8570
- spark ignition
  - combustion 5522
  - engine 5468, 5477, 5519, 5532, 5533, 5539, 5540
    - alternative fuels 5477
    - direct injection 5539, 5540
  - reciprocating engine 6832
- spatial aerosol distribution 9629
- spatial analysis 3336, 3338
  - Eigenvector methods 3336
  - Fourier analysis 3336
  - spatial autocorrelation 3336
  - spatial boundary analyses 3338
  - spatial clustering 3338
  - variography 3336
  - wavelet analysis 3336
- spatial autocorrelation 3327, 3334
- spatial correlogram 3334
- spatial crop structure 10035, 10037
- spatial heterogeneity 3327, 3329, 3331–3332
  - assumption of stationarity 3332
  - data type 3332
  - ecological consequences 3331
  - levels of organization 3329
- spatial mean velocity 2031
- spatial mismatch hypothesis 5799
- spatial pattern analysis 3328
- spatial scale 3335
- spatial statistics 3333
- spawning gravels 3755
- special sensor microwave/imager (SSM/I) 8932
- specialty chemicals 7596
  - catalysts 7595
- speciation 3358, 3361, 3365
  - allopatric 3361
  - parapatric 3361
  - sympatric 3361
- species 10061, 10063, 10068, 10072, 10085–10087, 10090–10091
  - breeding 1770
  - coexistence 10072
    - mechanisms 10068
  - competition 10061
  - conservation 10091
  - definition 10086
  - diversity 3300, 10085, 10087
    - species diversity ecosystems 3299
  - ecosystem function 10090
  - extinction 10091
  - genetic lineage 10086
  - interactions 10063, 10091
  - loss 6180, 10091
  - niches 10068
  - non-vertebrate 10087
  - predation 10061
  - taxonomic groups 10087
- species–enemy relationships 10063
- specific energy 3852, 3877
  - capacity 5105
- specific gamma-ray constant 8548
- specific heat of a material 4136
- specific leaf area (SLA) 2673
- specific power 3852
- spectral
  - calibration 11119
  - effects 9682
  - efficiency of light 11379
  - energy 11125
  - irradiance at the surface 11387
  - radiation 9713
  - sensitivity 11114–11116
    - of color imagers 11116
  - shifting 11413
  - solar irradiance (SSI) 9801
  - solar radiation 9727
- spectroradiometry 9725
- spectroheliogram 9481
- spectrophotometer 8808
- spectroradiometer 9713, 9714, 9727, 11103, 11106, 11150
- spectroscopic ellipsometry 9269
- spectroscopic-based diagnostics 5394
- spectroscopy 11381
- speed 4930
  - control 68, 72
  - coupling device 3380
  - sensor 3087
- spent fuel 10423
- spent nuclear fuel (SNF) 7067, 7181, 7188, 8589–8590, 8599, 8602
  - interim storage facilities 7181
  - radioactivity 8602
  - storage 7188
- spermatogonia 11033
- spermatogenesis 1686, 3645, 10818
  - germ-cell mutations 3645
- spermatogonia 646
- sperm 6151
- sperm-mediated gene transfer (SMGT) 10825
- spherical harmonics 4568
- spherical neutron dosimeters 5569
- spheromak 7165
- sphingolipid 1681
- spike
  - fertility 2629
  - index 2629
- spikelets 2542
- spilled radiation 2359
- spinal cord stimulation 6510
- spinal poliomyelitis 8142
- spin-orbit coupling 6074
- spiny-headed worm 12031
- spirulina type X 12038
- split service voltage 2978
- splitter 2202
- spongothymidine 3153

- spongouridine 3153
- spontaneous fission 8564
- sporozoite 6293
- SPR process 4006, 4010–4011
  - by-products 4010
  - description 4006
  - productivity improvement 4011
  - recycled products 4010
- spray dryer absorber (SDA) 11807
- spray irrigation 6626
- sprinkler irrigation 6658
- squamosa-promoter binding protein 2704
- squamous cell carcinoma (SCC) 9661, 11398, 11402
- squash 4464
  - virus-resistant 4464
- squirrel cage induction motors 5096
- stabilization 2444
- stable transformation 2585, 2590
- stack health algorithms 8225
- stack ventilation 6872, 6881, 6890
- stacked elemental layer 9404
  - rapid thermal process (RTP) 9404
- stacking of resistance transgenes 4027
- Staebler–Wronski effect (SWE) 7933, 8382, 9260
- staged combustion 1319
- stand-alone furnace 1386
  - efficiency 1386
- stand-alone furnace 1358, 1398
  - operational safety 1398
  - optimization of systems 1398
- standard bus 1895
- standard deviation of lane position (SDLP) 3112
- standard hydrogen electrode (SHE) 6039
- standard mean ocean water (SMOW) 5228
- standardbred trotter 1803
  - inbreeding 1803
- standing column well (SCW) 4151
- Stanford watershed model 5823
- staphylococcal food poisoning 5062
- Staphylococcus* 500, 502, 5061
  - *aureus* 500, 502, 2967, 5061
  - *pneumonia* 500, 501
  - treatment 5064
- starch 988–989, 4555, 11435
  - crops 11438
  - raw materials 989
- start-up burner 4969
- starvation 535
- STATCOM 12148
- state transition equations 2474
- static synchronous compensator 9342
- static synchronous series compensator 9350
  - separators 4282
  - surface condensers 4284
- steam-enhanced oil recovery (SAGD) 4409
- steam-generating power plant 8349
- steam-methane reforming 5174
- stearoyl-CoA desaturase (SCD) 10856
- steel recycling 9991
- steel slag 11704
- steering control 3143–3144
  - root means square steering error 3144
  - under reduced contrast conditions 3143
- Stefan condition 2765
- Stefan-Boltzman
  - constant 2766, 9592
  - equation 633
  - law 3216
- stellarator 7163
- stem cell 3605
  - division 3605
  - immortal stranding hypothesis 3605
  - marker 647
- stem lodging 6203–6204
- steptoe allele 4078
- stereoselective synthesis 7602
- sterilization 11391
  - by triploidy 10801
- Stern-Volmer
  - emission quenching 5194
  - kinetics 5176
- steroidogenesis 3275
- sterol 14[ $\alpha$ ]-demethylase 1188
- stewardship 566
- stillage 996–997, 1047
- stipules 1285
- Stirling cycle 9512
- Stirling engine 1248, 1331, 1332, 1348, 1408, 1417–1419, 1461, 1469, 1471, 1610–1611, 10495
  - countercurrent gasifier 1469, 1471
- stitching 6462
- stochastic state-space representation 3058, 11193
- stock enhancement 6387–6388, 6391, 6396
  - evaluation 6396
  - monitoring 6396
- stoichiometric LiNiO<sub>2</sub> 712
- Stokes
  - coefficients 4568
  - flow diagnostic equation 2768
  - law 7026
  - system 2771
- Stokes–Einstein equation 2024
- storage container 10556
- static VAR compensator 9342
- stationary fuel cell applications 7867
  - market requirements 7867
- statistical downscaling method 6597
- statistical entropy analysis (SEA) 11712, 11716
  - environmental impact 11716
- statistical mechanics 3787
  - foundations 3787
- stator 19
  - fault 44
- steady-state polarization (SSP) 6728
- steam
  - accumulator 2370, 10566–10567
  - boiler 1345, 4977–4980, 4982, 4986
    - auxiliary boiler systems 4977
    - chemical dosing system 4980
    - cleaning 4977
    - cooling system 4982
    - feed water system 4982
    - preheating 4986
    - rappers 4978
    - sootblower 4978
    - surface protection 4979
    - turbine system 4980
    - water shower cleaning 4977
  - explosion 969
  - gasification 1662, 5123, 5125
  - generator 4980
    - system (SGS) 2367, 2380
  - line scrubbing 4284
  - methane reformation (SMR) 3862, 3961, 5135–5136, 5138, 5142, 5144, 5154, 5161, 9606, 10516, 10518
- steam pipe/piping 4292
  - double-flash gathering system 4292
  - single-flash gathering system 4292
  - piston engines (SPE) 1248, 1331, 1405, 1420
  - power stations 4297
  - Rankine cycle systems 4297
  - reforming 5125
  - screw-type engine 1407
  - storage systems 10560
  - superheaters 5264
  - traps 4284, 4291
  - turbine 1247, 1330, 1409, 3849, 4250, 4278, 4282, 4284, 4311, 11773, 11775
    - back-pressure 4311
    - direct contact condensers 4284
    - equipment 4250
    - flash chambers 4284
    - flash tank 4284
    - hs diagram 11773
    - purifiers 4282, 4284

- storm track 2126, 2134, 2136, 5075
- stormwater 3460, 4685–4686, 4692, 4717, 4720, 8690, 8692, 8696, 1009510096, 10098, 10100–10101, 1010310104, 10106–10112, 10115, 10360, 11348
  - artificial neural networks (ANN) 10111
  - biofilter 10108–10109
  - biofiltration systems 10101
  - characteristics 10096
  - deep bed filtration 10107
  - education 10100
  - fiber filters 10107
  - filtration 10103
  - harvesting 10095–10096, 10104, 10111
  - management 4684, 4686, 10096, 11332
    - management model (SWMM) 10111
  - measuring treatment effectiveness 10111
  - microfiltration 10108
  - monitoring of water quality 10111
  - nonpoint source pollution 8690
  - objectives 10106
  - physiochemical treatment 10107
  - pollutants 10096
    - removal 10115
  - pollution 10098, 10100, 10106
  - pretreatment devices 10103
  - quality 10098, 10106
  - recycling 10104
  - reuse 10095–10096, 10110
  - runoff 4717, 4720, 8696, 10360, 11348
    - rates 4720
  - sand filtration device 10104
  - taxes 4705
  - treatment 10096, 10113, 10115
    - biofiltration 10115
    - effectiveness 10112
    - measures 10098
    - MUSIC model 10113
    - targets 10106
  - ultrafiltration 10108
  - volumes 4720
- stove 1310, 1352, 1358, 1389, 1492, 1615
  - emissions 1389
  - permanent combustion 1358
  - technology 1310
- strainmeter 11638
- strategy metrics 4622
- stratigraphic trapping 4122
- stratigraphy 11629
- stratosphere/stratospheric 113, 118, 2116, 2513, 9806, 10120, 10124, 10130–10131, 10135
  - aerosols 130, 4108, 9628, 10117, 10120, 10121, 10123, 10125, 10137
  - black carbon 10123
  - solar radiation management 10117
  - sulfate 10121
  - types 10121
- chemistry 10131
- cooling 10135
- engineered particles 10124
- heating 10124
- ozone 613, 11157
  - depletion 10130
  - hole 11153
  - layer 314, 653
  - natural ozone layer 10130
  - transport 8887
- pollution 205, 10129
- sulfate 10121
- stratosphere–troposphere coupling 9808
- stratovolcano 11615, 11620, 11622, 11624, 11629, 11642
- straw
  - combustion 1342
  - fuel furnaces 1382
  - gasification 5130
- stream 9049
- street canyon vortex flow 11300
- street canyon 259, 11272
  - scale 11313
  - vortex flow 11300
- street scale 11269
- street tree 11345
- street ventilation 11281
  - wind tunnel experiments 11281
- streetcar 1813–1815, 1890, 5978–5979, 5981, 5984, 6011
  - decline 5978, 5981
  - investments 6016
  - lines 5983, 10931
  - Presidents' Conference Committee 5979
  - productivity 5984
  - revolution in technology 5979
  - systems 5975–5976, 5982, 6015
    - capital infusion 5982
    - municipalization 5982
  - traffic densities 6011
- streptavidin 4038
- Streptococcus* 503, 5057, 6325
  - *iniae* 3566, 5057, 5064
  - *mutans* 8075
  - *pneumoniae* 503
- Streptomyces* 501, 502
  - *griseus* 503
  - *lavendulae* 502
  - *platensis* 500
  - *rubellomurinus* 502
  - *tenjimariensis* 1193
- streptomycin 10677
  - phosphotransferase (*SPT*) 10677
- stress- and maturation-induced promoter 10750
- stress tolerance 3
- stressor 1184, 1193
  - heavy metals 1193
- stress 1184, 1191
  - salinity-related 1191
- strip mine 6671, 6679
- strobilurin 2569
- Strongyloides* 12044, 12045
- strontianite 8624
- strontium 8452, 8459, 8623, 8639, 9950
  - strontium–90 3710
  - titanate (STO) 2954, 2955, 2956, 9892
    - catalysis 2956
    - conductivity 2955
    - wastes 4776
- structural equation modeling 3093, 3097
- structure activity relationship (SARS) 6800
- structured decision making 3347–3348
- structure 4553
  - endosperm 4553
- styrene 5566, 6909, 6918–6919, 6928
  - butadiene rubber (SBR) 253, 6133
  - monomer 6919, 6928
- subbituminous coal fly ash 2171, 2178, 2229, 3825, 8353
  - fly ash 3825
- submarine cable 7302, 7418, 7419, 11180
- submerged combustion 5282
- submergence tolerance 2713
- subnational immunization day (SNID) campaigns 8146
- subsea steel structures 6405
- subsea technology 6407
- subsidence bowls 4211
- substance concentrating efficiency (SCE) 11715
- substation 2291, 3004–3009
  - automation facilities 3009
  - design considerations 3005
  - grounding 3004
  - standardization 3006, 3007
  - voltage 3004
- substitute natural gas (SNG) 2251
- subsurface 4183, 4185, 10138, 10141–10142, 10144, 10146, 10156, 10418
  - biobarriers 10418
  - contaminants 10145
    - sustainable remediation 10145
    - transport 10142

- energetic compounds 10156
- explosive 10156
- fate 10138
- fluid flow 4185
- heat 4183
- karst 5663
  - mapping 5663
- permeability 4185
- petroleum hydrocarbons 10146
- porosity 4185
- remediation 10141, 10144
- soil 4142, 4148
- sustainable remediation 10144
- temperature distribution 4185
- transport mechanisms 10141
- transport of chemicals 10138
- water 4183
- sub-transmission substations 2994
- subtropical belt 9638
- suburban
  - bus routes 1875
  - light rail stations 5993
  - rail transit 10925
  - transit bus 813
- suburbanization 5788, 5790
- subway lines 5985
- subway 5996
  - lines 5985
- succession 3281–3283, 3285, 3288
  - Clements' concept 3281
  - Clementsian concept 3285
  - Cowles' concept 3283
  - facilitation model 3285
  - Gleason's concept 3283
  - individualist concept 3283
  - individualistic concept 3282
  - land-use policy of the United States 3288
- sucrose synthase 2648
- sucrose 1277–1278
  - synthase 2648
- sudden death syndrome (SDS) 3640, 8317
- Suffolk sheep 1760
- sugar
  - beet 1112, 1222, 4451
    - costs of production 4451
    - herbicide-tolerant 4451
  - crop 1272, 11438, 11447
  - intermediates 11440
  - kelp 518, 522
  - platform 11447
- sugarcane 1005, 1008, 1011, 1014, 1018, 1222, 1272–1276, 1292, 1539, 11448
  - agroecological zoning 1008
  - as a bioenergy crop 1275
  - bagasse 1276
    - cogeneration 1018
  - burning 1011
  - crop 1014
  - cultivation 1273
  - ethanol 1008, 10510, 10514
    - sustainability 1008
  - ethanol production 1010, 1012–1013
    - costs 1012
    - social aspects 1013
    - soil quality 1010
  - genome mapping 1018
  - harvesting 1014
    - manual 1014
    - mechanization 1014
  - industry 1009
    - land availability 1009
    - water pollution 1009
  - mills 1016
    - cogeneration 1016
  - plant 982
  - setts 1274
  - stillage in fertirrigation 1018
- sulfamethoxazole 11922, 11924, 11926
- sulfate 124, 171, 1316, 3778, 6381, 7338
  - aerosols 2116, 10121, 10123
  - sulfur 2209
  - waste 11704
- sulfate-reducing bacteria (SRB) 6411
- sulphydryl 1648
- sulfide 6381
- sulfite compounds 6145
- sulfobacter oxidants 1093
- sulfonated engineering thermoplastics 8335
- sulfonated perfluorovinyl monomer 6544
  - new synthetic routes 6544
- sulfonated poly(phthalazinone ether ketone)s 6560
- sulfonated polysulfones 7774, 8336
- sulfonic acid group 3882
- sulfopropylated polysilsequioxane 6561
- sulfotransferase (SULT) 3643
- sulfur 611, 765, 969, 1150, 1430, 1667, 2250, 2252, 2942, 2945, 3778, 3906, 3910–3911, 3979, 6381–6382, 6505, 6680, 8349, 9830, 11313
  - biogeochemical cycle 6381
  - deprivation 363, 365
  - dioxide 170, 204, 223, 235, 611, 2025, 2195, 2277, 2282, 8350, 8352, 10483, 11293, 11320
    - emissions 8883, 8891
  - emission 188
  - fuels 11320
  - heterocycles 4657
  - hexafluoride 3002, 6988
  - oxide (SO<sub>2</sub>) 208, 2278, 8352, 8366
  - poisoning 3911, 9875
  - tolerance 3906
- sulfur-containing fuels 9875
- sulfuric acid 118–119, 208, 699, 773, 1093, 2167, 5887, 8883
  - alkylation 7837
  - in lead-acid batteries 5887
- sulphated zirconia 4603
- sulphonic acids 4603
- summer crop 1123
- summer syndrome 11409
- sumoylation 3604
- sun 2807
  - activity 9621
  - exposure 3645
  - illumination 2807
  - leaf 2623
  - protection factor (SPF) 11385
  - shading 901
- sunburn (erythema) 9657, 9658, 11409, 11411
- sun–climate relation 9799
- sun–earth geometry 9745
- sunfleck 2620, 7920
- sunflower 9148–9149
  - dormancy 9148
  - seeds 9149
- sunflower–soybean intercrop 10046
- sunlight 631, 1477, 2806, 3611, 9667
  - harvesting 6574
  - reflection 2115
- sunphotometry 9713, 9714, 9725
- sunshade 2115, 10161, 10162, 10164–10166
  - efficacy 10162
  - engineering considerations 10166
  - geoengineering 10164, 10165
  - in space 10162
    - climatic effects 10162
  - Lagrange point 10166
- sunspace 7664
- sunspots 9480, 9798
  - darkening 9479
  - number 9475
  - observations 9480
- superbinary vectors 2593
- supercapacitor 794–796, 798–801, 3427–3428, 3441, 3847, 3852, 6771, 6773, 6784, 11503
  - bank (SB) 795
  - carbon electrodes 6771
  - electrochemical double layer 796
  - energy efficiency 801

- in neutral medium 6784
- in organic electrolyte 6771
- model 798
- nanoporous carbon electrodes 6770
- power availability 801
- storage bank 801
- total amount of energy 800
- working principle 796
- supercharging 5536
- superconducting
  - energy storage 6288
  - loops 6274
  - magnets 6250, 6253, 6257, 6259
  - winding 6251
- superconductor 6278
  - cost 6278
- supercooling 10559
- supercritical carbon dioxide 2159, 10169–10171, 10173–10174, 10176–10182
  - applications 10170
  - carbon–carbon bond forming reactions 10174
  - catalysis of enzyme 10176
  - chemical reactions 10171, 10177
  - cleaning 10182
  - continuous synthesis of methyl ethers 10176
  - diffusion coefficient 10170
  - dyeing 10182
  - electro-oxidation reaction of benzyl alcohol 10177
  - esterification of acetic acid and ethanol 10176
  - hydrogenation reactions 10171
  - inorganic nanomaterials 10179
  - material preparation 10179
  - oxidation reactions 10173
  - painting 10182
  - photo-oxidation 10174
  - polymerization 10178
  - preparation of polymer composites 10180
  - properties 10170, 10180
  - chromatography 10181
  - water-in-CO<sub>2</sub> microemulsions 10182
- supercritical fluid (SCF) 4616, 10169
  - chromatography (SFC) 10181
  - extraction (SFE) 10170
- supercritical gas extraction (SGE) 2224
- supercritical light water reactor (SCLWR) 4064
- supercritical water-cooled reactor 4063
- Superfund Act, see also Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 2006, 2007
- Superfund Amendments and Reauthorization Act (SARA) 2008
- Superfund Comprehensive Accomplishment Plan (SCAP) 2009
- superfund 2015, 3595, 10436
- superheated steam 10573
- superheater 1345, 1346, 4978
  - corrosion 5265
- super-insulation 898, 7630–7631
- supernatant 11950
- supernova explosion 11207
- superoxide dismutases (SOD) 4
- supersaturated water vapor field 119
- supersaturation 118
- supplemental irrigation 5630
- support vector machine (SVM) 3117
- supported liquid membrane 8720
- supported reagent 4600–4603, 4607
  - adsorption 4602
  - Bronsted acid catalysis 4603
  - catalysis 4602
  - evaporation 4601
  - loading the support 4602
  - preparation 4601
  - solid base catalysis 4607
  - wet impregnation 4601
- supramolecular photochemistry 5175
- supramolecular solar hydrogen photocatalysis 5175, 5209
  - palladium-based 5209
- surface 2767, 3222, 3239
  - air flow 11265
  - air temperature 4911, 4918
  - albedo 634, 2764, 2766
  - complexation models (SCM) 4779, 8613
  - desalination processes 2160
  - drainage 5656
  - energy balance 2766, 3215
  - evaporation 9736
  - forcing 3217
  - freshwater flux 7255
  - hydrology 8912
  - irradiance 9627
    - global distribution 9627, 9637
  - irrigation 5626–5627
  - jet 10982
  - karst map 5665
  - magnetism 9484
  - melting furnaces 11586
  - meltwater 2767
  - mining 2185, 6666–6667, 6669, 7810
    - solid wastes 6667
  - plasmon resonance (SPR) technology 3587
  - radiation 9732
    - measurements 9732
  - rail systems 5984
  - reflectivity 2116
  - runoff 3222
  - ruptures on structures 3239
  - solar dimming 9734, 9737
  - solar radiation 141, 9731–9734
    - impacts on the climate system 9734
    - urbanization effects 9732
    - variations 9733
  - temperature 656, 2106, 2122, 4681
  - tiles 3215
  - topography 8909
  - transportation 205
  - ultraviolet radiation 11151
  - ultraviolet variability 11152
  - water balance 3218
  - water body 11005
    - tritium 11005
  - water 3455
    - temperature 7307
- surface-enhanced Raman spectroscopy (SERS) 5385, 5392
  - bacteria identification 5392
- surgeonfish 832
- surrogate species 3303
- suspended sediment 2055, 2058
- suspended solid (SS) 11968
- sustainability/sustainable 66, 151, 189, 198, 406–407, 566–567, 1490–1491, 2006, 2062, 3201, 3278, 3287–3289, 3331, 3450, 3452, 3844, 4039, 8702, 8857, 8861, 9186–9188, 10189, 10261–10262, 10299–10300, 11341
  - agriculture 2742
  - aquaculture 566, 569
  - biochar system 885
  - breeding 1756, 1807
  - building 1037, 3676, 3680, 3702, 8703, 10192, 10194, 10196, 10206, 10281, 10291, 10294
    - early design phase 10206
    - enclosures 3702
    - energy generation 10291
    - experience 10196
    - knowledge 10196
    - operating costs 1037
    - principles 10194
    - theories 10194
  - building design 10197, 10209



- energy modeling tools 10209
- evaluation of selected tools 10209
- building massing 10266
  - health 10266
- built environment 10285, 10295
  - policy matters 10295
  - principles for the design 10285
- cities 6860, 11340
- concept 10189
  - of water 10189
- construction 10299, 10300
- definition 1491, 10262
- design 10262–10263, 10279, 10285, 10299, 10300, 10301, 10303, 10307
  - decision making 10261
  - definition of health 10263
  - health 10279
  - integrated delivery processes 10303
  - movement 10302
- development 8866
  - of indicators 9186
- ecological aquaculture (SEA) 10317–10321, 10323, 10327
  - chemicals 10320
  - chemotherapeutic compounds 10319
  - commercialization 10323
  - community design input 10323
  - ecological design 10320, 10321
  - energy consumption 10320
  - inorganic fish wastes 10320
  - operational framework 10320
  - operational involvement 10323
  - organic fish wastes 10320
  - social sustainability 10323
  - species selection 10319
  - stock escapes 10319
- economic aspect 11341
- ecosystem 10437
- education 3201, 3202, 3204, 3207–3208, 10025
  - for incarcerated youth 3208
  - history 3202
  - local-to-global connections 3208
  - program 3207
  - student outreach in science (SOS) 3208
  - twenty-first century 3204
- enclosures 3676
- energy 5882
- evaluating 3452
- farming 1783
- heating ventilation and air conditioning 10332, 10335–10342
  - architectural design 10337
  - bioclimate 10338
  - bioregionalism 10338
  - developing engineering alternatives 10336
  - engineering integration 10337
  - human factor 10341
  - ideal design diagram 10336
  - innovation 10340
  - integrated design process 10337
  - leadership in energy and environmental design 10337
  - optimizing high tech 10339
  - order-of-operations thinking 10336
  - prioritizing low tech 10339
  - rating systems 10342
  - replication 10341
  - system solutions 10335
  - tools 10340
  - whole systems thinking 10338
- herbicide-resistant crops 10344
- holism 198
- in animal breeding 406
- in water 10189
- indicator 9187
  - matrix 9188
- indices 9186
- indoor environments 10276
- interior systems 10275
  - ergonomics 10275
  - health 10275
  - materials 10275
- land use 10264
  - health 10264
- landscape 10357, 10360, 10382, 10385
  - analytical tools 10382
  - construction 10385
  - design 10385
  - indicators 10382
  - management 10385
  - planning 10385
  - visualization tools 10382
- lighting 10274
  - health 10274
- maintenance 10279
- mining 6634, 6642
- modern concept 1490
- of transgenic insect-resistant crops 4039
- productivity 10390
- rating systems 8702
- redefining 8861
- regenerative development 8857
- remediation 10435, 10442
  - forum (SURF) 10437, 10443
- resiliency 3452
- seafoods 9186
- smart grids 10448
- spatial disturbance legacies 3331
- science 3290
  - modern forestry 3290
- succession 3278, 3288
- through reintegration 10299
- trajectory 567
- transportation 10481, 10489–10490, 10543
  - definition 10489
  - solutions 10490
  - technologies 10490
  - types of vehicles 10490
- urban drainage systems (SUDS) 4686
- urbanism 10294
- vegetation dynamics 3287
- vehicle
  - fuels 10502
  - technologies 10482
- waste management 10577, 10581
- water production 10533
  - electrostatic interaction 10533
- water resource 11875
- water supply 8689
- water treatment 10530
- water usage 10358
- sustained multitrait selection 9360
- sustained Spheromak Physics Experiment (SSPX) 7167
- sustenance 3844
- swamp gas 1147
- sweep gas membrane distillation 2920
- sweet corn 2709
- sweet sorghum 1276–1278, 1292
  - as a bioenergy crop 1278
  - cultivation 1277
  - seed germination 1277
- swimmer's itch 12043, 12047
- swine flu 10860
- swine pathogen 10844
- swing-hammer shredder (SHS) 8812
- swirl injection 4969
- switched reluctance motor (SRM) 10542, 10543, 10546, 10549, 11526, 11531
  - electrical structure 10546
  - mechanical structure 10546
- switches 3001
- switchgear 2999
- switchgrass 1279, 1281–1284, 1293, 6024, 6025
  - agronomy 1284
  - ecotypes 1282
  - farming 10510
  - fertility 1283
  - for bioenergy 1284
  - seed germination 1283

- switching 10076
  - sylviculture 1446
  - Symbiodinium 2493
  - symmetry of ignorance 4535
  - synchronous machine 12142, 12144, 12147
    - pole-pair number 12147
  - synchronous power system 12105
  - synchronous reference frame 39
  - synchronous speed 12153
  - synchrophasor 12080–12082, 12088
    - measurement 12094
  - synchrotron 8577, 8586
    - photon 8577
    - powder diffraction 9896
    - radiation 9897
  - SynCoal 2217, 2218
  - SYNCOM process 6463, 6465
  - SYNCOM-Plus process 6485, 6487
  - syncrude 2225, 3978, 7811, 7816
  - synfuel 3956, 6246
  - synthesis gas (syngas) 848, 852, 1427–1428, 1433, 1442, 2153, 2168–2169, 2171, 2224, 2226, 2235–2236, 2248, 2250, 3938, 3947, 3957, 3961, 3966–3967, 3981, 5123, 5137, 5161, 5164, 5473, 7594, 8098, 9596, 9603, 11439, 11444, 11588, 11833
    - compressed 3981
    - nitrogen-diluted 3967
    - platform 11451
    - precombustion cleanup 2169
    - production capacity 3966
    - use in Fischer–Tropsch GTL 3961
  - synoptic weather system 5078
  - synthesis
    - plan 4632–4633, 4638
    - material efficiency 4632
    - strategy efficiency 4633
    - tree diagram 4621
  - synthesized biofuel 1216
  - synthetic
    - aperture radar (SAR) 288, 8940, 8942
    - biofuel 1043, 1428
    - biology 4499
    - breed 393
    - combustion 6463
    - crude oil 7816
    - diesel fuel 5471, 5473, 5490
    - synthetic estrogen 11962, 11963, 11975
    - fertilizers 2747
    - fuel 1585, 1604, 2218, 3956
      - production pathways 1585
    - gasoline 6246
    - gas 1034
    - graphite 6141
    - natural gas (SNG) 1428, 1494, 1612
    - organic chemistry 7596
    - pharmaceuticals 6522
    - porphyrins 7600
      - ligands 7599
    - precipitation leaching procedure (SPLP) 2442
    - procedures 4585
    - synthetic pulp separators (SPG) 8748, 8750
    - wheats 8020
    - zeolites 4586
  - system average interruption
    - duration index 2980
    - frequency index 2980
  - system integrity protection scheme (SIPS) 10945, 10948
  - systemic acquired resistance (SAR) 2574, 10697
  - systemic calcium homeostasis 9653
  - systemic fungicide 2568
  - systemin 4029
  - system-on-chip sensor 704
- ## T
- T lymphocyte 11134
  - tables 5515
  - tachycardia 6507
  - tachyplesin 10701
  - Tafel
    - equation 3880
    - law 3876
    - reaction 3416, 3420
    - slope 3420, 8341–8342
  - Tafel–Heyrovsky mechanism 3417
  - Tafel–Volmer mechanism 3416, 3420
  - Tafenoquine 11085
  - tail gas 1442, 2236
    - recovery 1589
  - tailings
    - dam 2792, 6674
    - failures 2792
    - flow 2793
  - taliglucerase alpha 8067
  - TAML catalysts 7609
  - tandem
    - catalysis 7612
    - cell 7576
  - tank melter 11586
  - tanker accident 7827
  - tantalates 7889
  - tantalum oxynitride 8270
  - target population of environments (TPE) 8014
  - targeted induced local lesions in genomes (TILLING) 366, 6794
  - targeted transposon tagging 2700
  - tar 1338, 1394, 1463, 1465, 1467, 1519, 1667, 5127
    - cracking 5305
    - degradation 1463
    - removal 1467
    - sand 7811
    - bitumen 7798, 7813
      - non-mining methods 7813
    - sand mining 7809
      - separation 1465
  - tasidotin 3156
  - tax incentives 12262
  - taxonomic key 5438
  - Taxus*
    - *baccata* 6525
    - biosynthesis 6529
    - cells 6525
  - Taylor expansion 12085
  - T-DNA transfer 2607
  - tebufenozide 2596
  - technetium 8393, 8397, 8403, 8430, 8522, 8624
    - generators 8522
    - in seawater 8403
    - Speciation 8393
    - transfer to farm animals 8430
  - technical glass-ceramics 11601
  - technological fix 12221
  - technological sustainability 8863
  - technologically enhanced naturally occurring radioactive material (TENORM) 8469, 8479, 8481, 8531
    - tobacco product 8481
  - technology 2439, 2440, 4495, 4496
    - agricultural 4496
    - fast-track 4495
    - hype cycle 4495
    - trigger 4493
  - technosphere 10578
    - nutrient certificates 9042
  - tectonics 4565, 11618
    - setting 11634
  - Teflon 6948, 7696, 7704, 8341
  - telecamera 46, 48, 56
  - telecommunication back-up power systems 5883
  - teleconnection 2123, 2128, 2137
    - El Niño-related 2128
  - teletherapy 8528, 8580
    - accelerators 8586
  - tellurium 1998, 7939
  - telomerase 647
  - Temkin adsorption conditions 8342
  - temperature polarization coefficient 2922

- temperature 4915, 4921
  - anomalies 4921
  - coefficient 3804
  - effect on sound speed 4915
  - fluctuations 4137
  - observations 4911
- TEMPO 7606
- temporal partitioning 10076
- temporary green space 11368
- temsirolimus 3155
- Teosinte 351, 2703
- Tephra 11641
- terephthalic acid (TPA) 3934, 3941
- termitary 6868
- termites 6868
- terpolymer 6542
- terra preta 881, 883
  - soil 846–847
- terra-vit melter 11588
- terrestrial
  - agriculture 560
  - biogenic 120
  - ecosystems 3302, 11892
  - heat flow 4195
  - mammals 10088
  - mass changes 4563
  - permafrost 281
  - proteins 577
  - radiation environment 8474
  - sediment sinks 3738
  - water storage (TWS) 3221, 4573
  - wind energy 7243
- terrestrialization 2176
- tertiary coals 2178
- Terzaghi ultimate bearing capacity theory 7407
- testicular cells 10908
- testis stem cell 10907
- testosterone steroidogenesis 1686
- tetraalkylsilicates 7592
- tetraalkyltitanates 7592
- tetracyanoquinodimethane 7547
- tetracycline 500, 10915, 11083
- tetrafluoroethylene (TFE) 8332
- tetrahydrofuran 1466
- tetraploidy 6166
- tetrapyrrole core 8273, 8279
- tetrol 121
- textiles 8829
  - milling 8829
  - recycling 8828
- thalidomide 3163
- thallium 4890
- theodolite 4211
- theory
  - of limits of selection 403
  - of mass transfer 600
  - of place 10374
  - of planned behavior (TPB) 12224
  - of relativity 3789
  - of selection limits 402
- therapeutic cloning 10907
- therapeutic proteins 8059
- thermal
  - aging 2387
  - breeder reactors 11216
  - bridge 3687, 7635
  - coal 2178
  - comfort 6873
    - air movement 6873
  - compressor 9516
  - conductivity 4135, 10555
  - conversion efficiency 1347
  - cracking 1464
  - cycle 1241
  - decomposition 1520, 2414, 3914
  - desalination plants 7306
  - desalination 9760, 9761
    - electrical characteristics 9761
    - humid air distillation 9760
    - technologies 2923
    - thermodynamic characteristics 9761
  - destruction facility 7001
  - diffusivity 4136
  - dissociation of metal oxides 9595
  - dryers 2204
  - drying 2213
  - efficiency 1211, 2208, 4264, 4267, 4275
    - work ratio 4275
  - energy 1302, 1353, 3804, 4133–4134, 4140, 4164, 4191, 8081
  - energy storage 10551, 10563–10564
    - concepts 10564
    - for concentrated solar power 10563
  - envelope 899
  - fatigue 2387
  - forcing 7368
  - heat conductivity 10568
  - insulation 1370, 4370, 4709, 4732–4733
  - ionization mass spectrometer (TIMS) 7206, 8657
  - mechanical analysis (TMA) test 8734
  - neutron 3801, 3812, 7090, 8552, 8572, 8625
    - energy 3800
    - Monte Carlo data 8552
  - oxidation 11852
  - plasma technology 8097
    - plasma jet 8099
  - pollution 6451
  - thermal power plant 1233, 1248, 5286, 11934, 11942
    - co-firing of biomass 5286
    - co-firing of RDF 5286
  - power station 3849
    - cogeneration 3849
  - power system 12109
  - radiation 4745
  - reactor 3816–3817, 3819
    - spatial oscillations 3817
    - Xenon override requirements 3816
  - reactors 3800, 3812
    - moderators 3800
  - stability 10569
    - ranking 6988
  - storage 896, 1423, 2379, 10564
    - capacity 4199
    - classification 10564
  - stratification 10555–10556
    - in heat storage vessels 10556
  - swing absorption 8221
  - treatment 11852
  - waste treatment 10581, 10585, 10587
    - for environmental protection 10585
    - recycling process 11730
    - resource conservation 10587
  - thermal wind balance 6742
- thermal-enhanced oil recovery 7808, 7814
- thermally-driven
  - air-conditioning 9558
  - chiller 9512, 9536–9537, 9546
    - thermodynamic analysis 9512
  - cooling cycles 9510
  - cooling system 9536
  - cooling techniques 9511
- thermally massive construction 901
- thermally-operated cooling processes 9550
- thermalization rate reduction 9427
- thermobitumen 7478
- thermochemical conversion 1205–1209, 1518
  - gasification 1208
  - heating and drying 1207
  - oxidation 1209
  - pyrolytic decomposition 1208
- thermochemical gasification 1216, 1446
- thermochemical hydrogen production 5123, 5131
- thermocline 4911, 8670
- thermocouple 1415

- thermodynamic(s) 117, 3787, 3877, 3927, 4226, 4251, 4258, 8207, 8906, 9003, 9413, 9590, 9938
  - driving force 2935, 5176
  - equilibrium 1340, 7159
  - first law 3927, 4226
  - foundations 3787
  - of solar thermochemical conversion 9590
  - overpotential 3415
  - overvoltage 3415–3416
  - potential 6062
  - second law 4226
  - state diagrams 4255
  - system 3306
- thermoelectric effect 5539
- thermoelectric generator 1415, 1419
- thermoelectric power generation 3456
- thermograph 4911
- thermography 603
- thermogravimetric (TG) measurement 3437
- thermohaline 5858
  - circulation 2524, 5872, 7377
  - box model 7377
- thermoluminescence dosimetry (TLD) 3024–3025
  - filters 3026
  - for neutron radiations 3026
  - inorganic materials 3025
- thermolysis of H<sub>2</sub>O 9597
- thermonuclear test 8497
- thermonuclear weapons 3712
- thermo-oil 1439
- thermophiles 11389
- thermophilic anaerobic bacteria 5119
- thermo-photo ratio 2552
- thermopile 9681
  - pyranometers 9732
- thermoplastics 8817–8818
- thermoset polymer 6926
- thermoset 8818
- thermosphere 9803
- thermostable direct hemolysin (TDH) 9087
- thermotolerant coliform 6325, 11876
- thermotropic 2838
- thiadiazole 7579
- thiamine 1684
- thin film
  - solar cell production companies 7954
  - silicon anodes 9303
    - amorphous 9303
    - nanocrystalline 9303
  - silicon solar cells 9241
  - solar cells 7956, 9276, 9280, 9395
  - back reflectors 9276
  - cell structures 9280
  - modules 9280
  - performance issues 9280
  - technologies 9405
    - large-scale processing 9405
- thioether 3666
- thiolactomycin 501
- thiol 3666
- thionation 4645
- thionin 10697
- thionyl chloride 6505
- thiophene 7567, 7579
- thioredoxin 3667
- thiospinel framework 760
- thiosulfate 6660
- thixotropic fluid 4416
- thiyl radicals 3666
- thorium 3819, 4165, 4180, 5610, 6689, 7055, 7061, 7063, 7102, 7195–7196, 7275, 8453, 8475, 8480, 8565, 8624, 11201, 11204–11207, 11210, 11216
  - as a nuclear fuel 11204
  - average vertical distribution 11210
  - decay 8565
  - dioxide's 7196
  - energy content 11205
  - geoneutrino estimates 11207
  - high-temperature reactor (THTR) 4053, 7102
  - molten salt seactor (TMSR) 4058
  - resources 11201, 11206
- thoron 8475
- three-domain Cry toxin 4015, 4024, 4025, 4027, 4028
  - domain exchange 4027
  - fusions 4028
  - mutagenesis 4028
- threshold dose 3254
- threshold energy 3799, 6112, 8562, 8569
- Thévenin impedance 12091–12092
- thymidine 11060
- thyristor 11539
  - thyristor-controlled series capacitor 9345
  - thyristor-switched capacitor 9341
- thyroid
  - adult carcinomas 3644
  - hormone 3637
- tick-borne disease 1757
- tide/tidal 10614, 10620
  - barrage 10614, 10616, 10620
  - possible sites 10616
  - current technology 10616
  - currents 10618, 10620
  - development options 10620
  - energy available 10618
- energy 10613
  - conversion 7244
  - resources 7243
- lagoons 10616
- turbine 6351
- tidewater glacier 2767
- tight gas 7450
- tight sand 7451
- tight ultrafiltration 10530
- tiled stove 1363
  - insert 1363
- tillage 1270, 2561, 2748
  - erosion 3709, 3728
  - system 1134
- tiller 2542
  - inhibitor gene (*Tin*) 2628
- tilling 4497
- tilt of the earth's rotation axis 9622
- tilting furnaces 5277
- tilting train 4933
- tiltmeter 11638
- timber 2409–2410
  - composting 2410
- time to flowering 4076, 4078
  - controlling duration of subphases 4078
  - controlling 4076
- time value of money 7184
- tin 4889
  - tin-based amorphous composite oxide (TCO) 9299
  - tin-oxide 8187
- tire 3056, 3064
  - behaviors 3058
  - curve 3057
    - nonlinear region 3057
  - forces 3058
  - lateral friction coefficients 3064
  - load sensitivity effect 3064
  - models 11191
  - slip angle 3056, 11191
  - velocity vector 3056
- tire-road
  - friction coefficient 3053
  - friction estimation 3054
  - interaction 3056, 3065, 11199
    - Dugoff model 11199
  - interface 3056, 11191
- titanium 2902
  - carbide 8297
  - dioxide 271
  - silicate 7591
    - oxidation catalyst 7591
- T-junction 3091, 3095

- tla1* 355  
 – mutation 367  
 T-lymphotropic retrovirus (HTLV) 5000  
 tobacco 1709, 1715, 4024, 8482, 10686  
 – chloroplasts 4024  
 – genome 10686  
 – virus (TMV) 2590, 8077, 10678, 10702  
 – plants 4030, 10677  
 – radioisotopes 8482  
 – smoke 3590, 3598, 3609, 3612, 3638, 3645, 6875, 10638  
 – carcinogenic components 3612  
 – genotoxicity 3645  
 – toxicants 3612  
 tobacco-related disease 10640  
 tobacco-specific N-nitrosamines 10639  
 tocochromanol 1705, 1707  
 – biosynthesis 1705  
 tocopherol 1705  
 –  $\alpha$ -tocopherol 1707  
 tocotrienol 1705  
 –  $\delta$ -tocotrienol 1707  
 toilet wastewater 1151  
 Tokamaks 7161  
 Tokuyama's alkaline ionomer 379  
 toll/tolled  
 – collection 4953, 5031  
 – express lanes 5022, 5024  
 – highway facilities 5022  
 – lane 4945  
 – lane users 5029  
 – revealed preference 5029  
 – payers 5041  
 – income levels 5041  
 tomato line 2702  
 tomato spotted wilt virus (TSWV) 10703  
 tomato 1705  
 tomographic gamma scanner (TGS) 7208  
 tonsillectomies 8129  
 tool for the reduction and assessment of chemical and other environmental impacts (TRACI) 4856  
 top of atmosphere albedo 9627  
 top of atmosphere irradiance 9621  
 – global distribution 9621  
 – obliquity of the Earth's axis 9621  
 – solar zenith angle (SZA) 9621  
 topography/topographic 153, 8909  
 – index 3214, 3223  
 – solar radiation modeling 10621, 10628, 10634  
 topoisomerase inhibitor 5581  
 torque  
 – calculation 29  
 – coupler 3380, 3382  
 – equation 42  
 – (power)-speed 11484  
 – production 22  
 – productivity 28  
 torrefaction 1067–1068, 1075, 1079–1080, 1085, 1585, 1609, 5126  
 – gases 1080  
 – plants 1079  
 torrefied biomass 1078, 1086  
 torsatron 7163  
 tortuosity 4186  
 TOSHIBA Process 4005  
 total breeding value (TBV) 9364, 9371, 9375  
 total building energy 10246  
 total building performance and diagnostics (TBDP) 10195  
 total column water vapor (TCWV) 7248  
 total economic value (TEV) 4788  
 total energy transmission 2850  
 total material requirement (TMR) 10405  
 total nitrogen (T-N) 2336  
 total organic carbon (TOC) 9569, 11868  
 total phenotypic value (TPV) 9375  
 total phosphorus (T-P) 2336  
 total photovoltage 7576  
 total radiative power 9742  
 – spectral distribution 9742  
 total solar energy transmission 2886  
 total solar irradiance (TSI) 9470, 9472, 9475, 9478, 9707, 9742, 9799, 9481–9482  
 – by multi-linear regression 9482  
 – construction of a composite 9472  
 – network 9481  
 – observations 9470  
 – photospheric faculae 9481  
 – spectroheliograms 9481  
 – three-component proxy model 9478  
 – variability 9475  
 – variations 9469  
 total soluble protein (TSP) 8062  
 total suspended solids (TSS) 8926  
 total tritium 11013  
 – activity 11015  
 – concentration in urine 11013  
 total water 10189  
 tourism 7390–7392  
 – economic impact 7391  
 – industry 7392  
 – public awareness campaigns on environmental issues 7391  
 tower shielding facility (TSF) 8539  
 town gas 851, 3910  
 Townsend avalanche 5564  
 toxic(s)  
 – air pollutant 203  
 – chemicals 10636, 10638, 10648  
 – in the home 10648  
 – lifestyle-associated exposure 10638  
 – equivalency factor (TEF) 4883  
 – fish 830  
 – gas 208  
 – in the air 299  
 – metals 9090  
 – seafood-associated 9090  
 – organic chemicals 10657–10658  
 – characteristics 10658  
 – properties 10658  
 – organic pollutants 5300  
 – combustion 5300  
 – pollutants 1628  
 – potential indicator (TPI) 4860  
 – release inventory (TRI) data 4859  
 – shock syndrome 5062  
 – substances control act 7826  
 – wastes 10011  
 toxicant 3257, 3265, 3586, 3625  
 – acclimation 3257  
 – low-dose treatments 3586  
 – young children 3625  
 toxicity 3262, 3270  
 – biomarker 1188  
 – characteristic leaching procedure (TCLP) 2439, 3444  
 – field studies 3270  
 – mechanisms 3262  
 – testing 3270, 3271, 3273  
 – aquatic tests 3271  
 – field tests 3271  
 – lowest observed effect concentration (LOEC) 3271  
 – no observed effect concentration (NOEC) 3271  
 – nonstandard tests 3271  
 – test medium 3271  
 – weights 4859, 4861  
 toxicogenomics 3275  
 toxicology 3253, 3624  
 – exposure 3624  
 toxin 832, 9082, 9083  
 – diffusion 2029  
 – in a biofilm 2029  
 – *Gambierdiscus*-associated 832  
 – seafood-associated 9082–9083  
 trabectedin 3156  
 trace  
 – elements in the urban atmosphere 11306  
 – minerals 1682

- trachoma 12011–12012
- track sharing 1868
- tracking 11460
  - reflector systems 7620
- traction
  - industry 5979, 5981
  - lines 5977
  - motor 11524, 11535–11536, 10544, 10549, 11523, 11535, 11538–11539, 11544
    - design methodology 11538
    - fixed- or variable-gearing transmissions 11535
    - geared 11536
    - gearless 11536
    - power electronics 11539
    - single- or multiple-motor configurations 11535
    - system voltage 11536
  - power 8116
- tractive effort 11482
- tradable green certificates (TGC) market 12263
- traditional Chinese medicine (TCM) 3151
- traditional sustainability 9032
- traffic 2484, 3080, 4931
  - assignment model 274
  - assistance systems 3080
  - calming 72
  - congestion 1858, 1861
  - control devices 5938
  - densities 6011–6012
  - engineering 5935
  - federation 5988
  - flow 93
  - game theoretic methods 2484
  - induced demand 4931
  - injuries 66
  - management 270
  - policy 654
  - safety 2464
  - signal
    - controller 100
    - preemption 1872
    - priority (TSP) 1872
  - simulation 93
  - simulator 2469
  - situation 256
  - surveillance 98
- traffic-flow point measurement 3086
- trailing edge noise (TBL) 12281
- Train à Grande Vitesse (TGV) 4933
- TraitMill™ 10
- tram 1813
- transboundary pollutant 11319
- transcription activator-like
  - effector nucleases (TALENs) 2972, 10761
  - family of type III effectors (TALEs) 4492, 4498
- transcription factor 4, 10698, 10761
- transcriptional gene silencing (TGS) 2605, 8061, 10673
- transcriptome 4518, 6441
  - sequencing 6441
- transcriptomics 8, 3658, 10895
- transesterification 922, 927–928, 1028, 1219, 1592, 1613
- transfection 2585, 10899
- transfer 8433
  - coefficient 597
  - DNA (T-DNA) 2691
  - points 95
  - resistance 597
  - to wildlife 8433
- transformation 2585, 2587, 2591–2592, 2682, 2691, 10675, 10686
  - *Agrobacterium*-mediated 2585, 2587, 2591, 2682, 10675, 10686
  - in planta technologies 2591
  - protocol 8
  - vector 2592
- transformer 2998, 3010
  - cooling 2998
  - current differential protection 3010
  - windings 2998
- transgene 2585, 4498, 4507, 4513, 10673, 10677–10678, 10680, 10848, 10914
  - by exogenous inducers 10914
  - copy number 10680
  - expression variability 10677
  - expression 10672, 10677, 10678, 10687, 10707, 10868, 10899
    - influence of the integration position 10678
  - intron-mediated enhancement 10678
  - loci 10675
  - rearrangements 2603–2604
  - sequential introduction 10848
  - silencing 643–644, 2603, 2608, 10673, 10678, 10680
  - zinc finger targeted insertion 4498
- transgenesis 639, 644, 4493, 4496, 4504, 4517–4518, 4520–4521, 10801, 10816, 10826, 10866–10867, 10887, 10895, 10918
  - lentiviral 10826
  - viral-mediated 10826
- transgenic(s) 2585, 10895
  - alternative gene transfer methods 10895
  - animals 399–400, 2965, 2972, 6153, 7217, 7222, 10814, 10823, 10840, 10847, 10866, 10870, 10872–10875, 10877, 10882, 10897, 10914–10915, 10917
    - animal welfare 10877
    - as a risk 10872
    - cost–benefit calculations 2972
    - disease-resistant 2965
    - DNA microinjection 7222
    - ethical dialogues 10882
    - ethical issues 10874
    - expression of multiple genes 10847
    - in food production 10870
    - moral concerns 10873
    - perceptions 10872
    - productivity 400
    - socio-economic changes 10875
    - usefulness 10873
  - chicken 640, 2971
  - clones 10897
  - cotton 10705
- transgenic crop 2682, 2685, 4435, 4493, 4504, 4512, 5324, 10346, 10694–10695, 10704, 10713–10718, 10723, 10732, 10748, 10765
  - breeding 4524
    - commercialized disease resistant 10704
    - disease-resistant 10695
    - economic impact 4435
    - environmental impact 10713, 10717
    - herbicide tolerance 10716, 10723
    - in Brazil 4512
    - insect-resistant 10715, 10717
    - next generation 10732
    - regulatory framework in the European Union 10765
    - risk assessment 10718, 10765
    - salinity tolerance 5324
- dairy cows 2967
- enzymes 8028
- fish 10796, 10797, 10799–10802, 10804–10807, 10857
  - adaptive and proactive management 10807
  - as biomonitors 10807
  - benefits 10806
  - ecological hazards 10800
  - ecological risk assessment 10800
  - effective risk management 10805
  - electroporation 10797
  - genetic hazards 10801
  - growth-enhanced 10800
  - hazards 10806

- interactive decision-making framework 10805
- operations management 10805
- oversight of production 10807
- phenotypic characterization 10801
- physical confinement 10804
- potential harms 10800
- reproductive confinement 10804
- risk management 10802
- food animal 10841, 10856
- herbicide resistance 10350, 10353
  - crops 10345–10347
  - genetic engineering strategies 10350
  - non-transgenic strategies 10350
- insect-resistant crops 4024
  - plastid transformation 4024
- livestock 10812, 10814, 10817, 10839–10840, 10852, 10860, 10864, 10866, 10874, 10878
  - enhanced nutritional quality 10852
  - environmental impact 10840
  - ethical concerns 10864, 10866
  - food production 10812
  - integrity 10878
  - naturalness 10878
  - risks to humans 10874
  - technologies 10814
- maize 4519
- mammals 7216
  - nuclear transfer 7216
- mice 10857, 10916
- petunia 10678
- phytase enzymes 10752
- pig 10822, 10832, 10841–10842, 10844, 10857, 10859
  - growth 10841
  - health status 10844
  - improved digestion 10841
- plant 1716, 2311, 2586, 2601, 2684, 4022–4023, 4026–4027, 4029–4030, 4034, 4036, 5327, 6531, 8045, 8047, 8049, 8050, 10672–10673, 10697, 10748
  - cotransformation 1716
  - cry proteins 4023, 4027
  - economics of cellulases 8047
  - environmental safety 8050
  - fungus-resistant 10697
  - generation 10673
  - insect resistance 4029, 4036
  - insecticidal proteins 4022
  - insect-resistant 4030
  - multigene transformation 6531
  - multiple toxins 4026
  - peroxidase activity 4034
  - product recovery 8047
  - product safety 8049
  - pyramiding 4026
  - regulation of growth 8049
  - resistance to geminiviruses 10748
  - safety of Host Proteins 8050
  - salinity tolerance 5327
  - supertransformation 1716
- poultry 10845
  - enhanced digestion 10845
  - health 10845
- proteins 8051
- resistance 10696, 10700, 10702
  - to bacterial pathogens 10700
  - to fungal pathogens 10696
  - to viral pathogens 10702
- ruminants 10844–10845
  - enhanced digestion 10844
  - health 10845
- seed 2294, 2297, 8030
- sheep 10857
- technologies 639, 10870, 10876, 10885
  - public perceptions 10870
  - risks to animal welfare 10876
  - welfare assessment 10876
- tobacco 4023, 10698
- vector 10823
- virus resistance 10706
- zebrafish 6798, 10798
- transient climate sensitivity (TCS) 2516
- transient expression 2585
- transient tracers in the oceans (TTO) 8670
- transit
  - adjacent developments 10924
  - agencies 1825, 1862
  - experience 1829
  - bus 1863
    - applications 3482
    - technology 5980
  - capacity 1885
  - capacity and quality of service manual (TCQSM) 98
  - capital investments 5998
  - costs 5998
  - diesel hydraulic bus 5980
  - financing 1905
  - first policy 10925
  - impact development fee (TIDF) 10932
  - investment 5997
  - line capacities 1897
  - transit modeling framework 94
  - modes 1859
    - selection 1859
  - network 97, 104, 6008
  - operations control 91, 99
  - performance measurement 5975
  - productivity 5995, 5997
  - services 1861
    - downgrading 1861
  - signal priority (TSP) 100, 1825, 1852
  - simulation 93
  - simulation laboratory 102
  - simulation model 100, 107
    - measures of effectiveness (MOEs) 100
  - supply 95, 104
  - transit systems 816, 1893
    - capital costs 1893
    - simulation 96
  - technologies 1891, 1900
  - travel time 6001
- transiting radiation 8472
- transition metal
  - cermet 3907
  - ions 6543
- transit-oriented development (TOD) 1890, 10923–10925, 10927–10932
  - bus-based 10925
  - environmental benefits 10927
  - financing 10932
  - implementation tools 10930
  - mixed-use 10931
  - not-in-my-backyard (NIMBY) resistance 10931
  - parking 10929
  - ridership at the workplace 10928
  - scope 10924
  - tax increment financing 10932
  - transportation 10927
- transitway 1822, 10926
  - green connectors 10926
- translational ecology 9169
- transmembrane osmotic pressure difference 2916
- trans-Mexican volcanic belt (TMVB) 11615
- transmissible gastroenteritis virus (TGEV) 2969
- transmissible spongiform encephalopathies (TSE) 2969, 10859
- transmission
  - blackouts 10934
  - cables 11177
  - electron microscopy (TEM) 723, 7568
  - expansion 12190, 12193, 12197
    - maximum potential budget 12193
  - gear box 3369
  - gear ratio design 11486
  - grid 3451, 12216



- lines 12189, 12193, 12196
  - price differences 12193
  - rule of three 12189
- of malaria parasites 11072
- planning method 12188
- plan 12189, 12197
  - reliability test 12197
  - robustness test 12197
- smart grid 10953
  - wide area monitoring, protection, and control (WAMPAC) 10953
- substations 2994
- system 3393, 12175
- system operators (TSOs) 10939
  - transmission system 12186, 12195
  - economic studies 12186
  - loading 12195
- transmission-blocking vaccines 6301
- transmutation 3791
- transparent conductive oxide 1983
- transparent insulation wall (TWD) 7658
- transpiration efficiency (TE) 2650
- transplastomic 2585
- transport 6245
  - activity 247
  - emission 274
    - model validation 274
  - equation 3815, 5306
  - fossil fueled 6245
  - in the environment 10962
  - mass 2049
  - pollution 245
  - protein 5
- transportation 3456–3457, 3460, 6243, 7847
  - applications 6119
    - field-failures 6119
  - demand management 92
  - energy 3457
  - fuels 1200
    - from biomass 1200
    - costs 7847
  - history 6243
  - impact of new modes 6243
  - improvements 4948
  - infrastructure 5044, 7793
  - land use 3457
  - modeling 7854, 7861
  - networks 7851
    - policy issues 7851
  - policies 1862
  - sector 10504
  - sustainability 7847
    - system 66, 91, 7861, 11455
      - policy implications 7861
    - water 3460
- transportation-energy markets 7856
- transposase 644
- transposon 644, 10830, 10903–10904, 10906, 10917
  - insertion 2700
  - tagging 2691
- Transrapid 6242, 6248, 6251, 6257, 6263, 6268
- transuranic(s) 3818–3819, 7181, 8402, 8413, 8681
  - elements 3791
  - isotopes 3793, 8596
  - waste (TRU) 8589, 8595, 8596
    - waste isolation pilot plant (WIPP) 8596
- transuranium 8389, 8391
- transverse diffusive transport 2033
- trapped radiation 8471
  - belts 8577, 8579
- trash 10014
- travel/traveling
  - behavior 96
  - grate furnaces 1323
  - in high speed 4931
  - models 7854
  - time 101
- traveler information 92
- travel-time variability 102
- Travis hydrolytic tank 1148
- treated ash aggregate (TAA) 11752
- trehalose 5326
- Trematodes* 12023, 12043, 12047
- trenching 4146
- triacylglyceride 1681
- triacylglycerol 361, 927, 11437
- triadimenol 6209
- triazine 4450
- triazoles 2569
- triboelectric separation 2412
- trichiasis 12012
- trichinellosis 12029
- trichlorobiphenyl 9136
- trichloroethylene (TCE) 2043, 10439, 10962
- trichloro-naphthalene 4886
- trichlorosilane 9199
  - gas 7957
- trichlorovinyl 6996
- Triclosan 500, 10652
- triethylamine 374
- trifluoroacetic acid (TFA) 8177
- trifluoromethanesulfonic acid 6557
- trifluoromethyl 6539
- tri-generation 1611
- triggered seismicity 2793
- triglyceride 578, 930, 1045, 1681, 6897, 6900
  - epoxidized 6900
  - oils 6935
  - transesterification 930
- trihalomethane (THM) 3639, 3647, 10537
- 3-trihydroxysilyl-1-propanesulfonic acid (THOPS) 6561
- trilateral flash cycle (TFC) 4327
- trimethyl boron (TMB) 9243
- trinary model 1902
- trinitite 8488
- trinitrotoluene (TNT) 8488
- triple phase boundary (TPB) 8208
- triple superphosphate 3772
- triple-flash power station 4298
- tritiated compounds 11047–11048, 11052
  - biokinetics 11052
  - dosimetry 11052
  - internal dosimetry 11047–11048
- tritiated DNA precursor 11059
  - biokinetics 11059
- tritiated gas (HT) 11028, 11029
- tritiated hydrocarbon 11047, 11048
- tritiated hydrogen (HT) 11004, 11009, 11011–11012, 11016
  - atmospheric releases 11009, 11012, 11016
  - biological activity 11004
  - concentrations in water 11011
  - gas 10998–10999
  - nonequilibrium conditions 11011
  - time-dependent concentrations 11012
- tritiated oil 11049
- tritiated organic compounds 10999, 11049
- tritiated particulate 11047
- tritiated thymidine 11059
- tritiated water (HTO) 10998, 11000–11001, 11006, 11008–11010, 11015, 11017, 11028, 11029, 11046, 11048, 11052, 11054, 11060
  - absorption through skin 11054
  - aquatic releases 11010, 11017
  - atmospheric release 11006, 11008
  - bioassay monitoring 11054
  - biokinetic model 11060
  - biological half-life 11052
  - concentration
    - in animal products 11009
    - in soil water 11009
  - current ICRP models 11046
  - cycling 11000

- evapotranspiration process 11015
- molecules 11001
- reemission from 11001
- soils 11001
- Taylor model 11060
- tritium-in-urine measurements 11054
- tritium 3583, 5580, 5602, 5610, 7157, 8431, 8484, 8567, 8600, 8624, 8657, 8670, 8674, 8680, 10997–11000, 11003, 11005–11007, 11012, 11014, 11018–11021, 11026–11039, 11041–11043, 11045–11046, 11050, 11055, 11057, 11060–11061
  - acute releases 11012
  - adverse health effects 11030
  - amino acids 11037
  - aquatic processes 11005
  - atom 11045
  - beta radiation 11030, 11035, 11041, 11046
  - biokinetics 11045
  - biological effects 11028, 11061
  - biological half-life 11000
  - biological modeling 3583
  - carcinogenesis 11043
  - carcinogenicity 11034
  - chemical Forms 11029
  - chronic intake 11057
  - concentration
    - in animal products 11007
    - in background areas 11006
    - in the plant 11007
    - in water 10999
  - deterministic effects 11030
  - DNA-bound 11060
  - dose rate effectiveness factor (DDREF) 11042
  - dosimetry 11026, 11045
  - dynamic release 11014
  - effects in the female 11033
  - effects in the male 11033
  - environmental behavior 10998
  - environmental concentrations 11006
  - environmental models 11021
  - experimental studies 11042
  - gas 8525, 11055
  - health effects 11026, 11038
  - hereditary effects 11036
  - human epidemiology 11038
  - intake 11050–11051
    - nursing 11051
    - pregnancy 11050
  - in the environment 10997, 11000
  - isotopic effect 11039
  - lethality 11030
  - model validation 11019
- Monte Carlo sampling program 11035
- nonradiological effects 11039
- nucleosides 11037
- occupational doses 11037
- plume 11005
- prenatal dosimetry 11050
- properties 10998, 11028
- radiation 11027, 11036, 11037, 11044, 11061
  - dose 11031
  - electron energy 11044
  - ionization path lengths 11044
- radiation-induced teratogenic effects 11032
- radioactive properties 11029
- relative biological effectiveness 11041
- release 11014
  - dynamic compartment models 11014
  - process-oriented models 11014
- reproductive effects 11032
- routine releases 11006
- skin absorption rates 11055
- species 10998
- specific activity 10999
- stochastic effects 11034, 11061
- teratogenic effects 11031
- transferin aquatic systems 11018
- transfer in the environment 11020
- transmutation 11039
- uncertainty 11019
- uptake by terrestrial animals 11003
- tritium-gas-contaminated surfaces 11056
  - skin contact 11056
- Troglotrematidae* 12027
- Trojan horse antibiotics 506
- trolley buses 5980, 5989
- Trombe wall 902
- trophectoderm (TE) 6157, 6157
  - genes 6161
- tropical atmosphere 7374
- tropical biennial oscillation (TBO) 6745
- tropical carbon cycling 6231
- tropical climate 2144
- tropical cyclone 5071, 5074, 12077
- tropical diseases 11070
- tropical health 11068–11069, 11089, 11092
  - sustainability 11068
- tropical infection 11091
- tropical night 4676
- tropical soil 1924
- tropical storm 2082, 5077
- troposphere/tropospheric 113, 118, 2116, 2513, 8586, 9805–9806, 11314
  - aerosols 9629, 9635
- chemistry 317
- jet stream 9809
  - perturbations 9809
- ozone 170, 189, 220, 5530
- pollution 2116
- radioactive debris 8586
- solar cycle signal 9805
- sulfate aerosols 4111
- temperature mechanism 7259
- truck lane 5043
- true breeding value 423
- true-color night vision systems 11126
- trunk pipeline 6419–6421
  - damage by trawl-board impact 6421
- trypanosome lytic factor (TLF) 2972
- tryptophan 1695
- T-strand 2600
- tsunami 11633
  - earthquake-induced 11633
- tube receiver 2364
- tuberculosis 11129–11131, 11133–11136, 11138–11139, 11141–11144
  - case fatality 11131
  - case notifications 11144
  - chronic renal failure 11135
  - control 11141–11142
  - corticosteroid treatment 11136
  - diabetic patients 11135
  - disease 11134
  - drug-resistant 11139
  - elimination strategy 11144
  - epidemiological Indicators 11130
  - epidemiology 11129
  - exposure 11131
  - global epidemiological situation 11143
  - global treatment success 11144
  - hemodialytic treatment 11135
  - HIV infection 11136
  - incidence 11130, 11143
  - infection 11134
    - annual risk 11134
    - average annual 11134
    - control measures 11138
    - key pathogenic factor 11134
  - intensified case finding 11138
  - isoniazid preventive therapy 11138
  - mortality 11131, 11136, 11143
  - multi-drug resistant 11142
  - natural history 11131
  - personal protective equipment 11133
  - prevalence 11131, 11143
  - smoking 11136
  - sputum
    - culture-positive pulmonary 11131
    - smear examination 11133

- tubular aerosol flow reactor 9601
- tubular daylight guidance system (TDGS) 2811
- tubular fixed bed reactor (TFBR) 2243
- tubular photoreactor 9577
- tubulin 3159
- tumor suppressor gene 3601, 3603, 3543
- tuna farming 6356
- tundra 1552
  - *Rangifer tarandus* 8450
- tungsten 8576
  - bronzes 2958
  - carbide 8266
- tunicate 1965
- tuning 5509
- tunnel effects 4940
- turbid water 7680
- turbine 4280, 6815, 6821, 6823, 6826, 6838
  - analysis 4261
  - component 6821
  - cooling 6823, 6826
  - for double-flash steam 4280
  - hot gas path (HGP) 6821
  - inlet temperature (TIT) 6821, 6838
  - safety 6602
    - wind conditions 6602
- turbocharging 5535, 5536
- turbojet 6812
  - engine 6812
- TurboPlasma 8109
- turbosorp dry scrubbing technology 11807
- turbulence/turbulent 6593, 7401
  - mechanically produced 6593
  - diffusion 2031, 2047, 2049, 10961
    - coefficient 2050, 2051
  - diffusivity 600, 2053
  - dissipation rate 11275
  - eddies 2049, 2051
  - flow 2049, 2053
    - Prandtl's mixing length hypothesis 2053
  - jets 10976
    - in stagnant environment 10976
  - kinetic energy 11275, 11286
  - Schmidt number 596
  - transport in the environment 2048
  - viscosity 2053
  - wave dissipation term 601
- turn signal activation 3091
- turtle 3568
- TwinRec commercial plant 4000
  - commercial operational experience 4000
- two-electron transfers 3658
- Twomey effect 9697
- two-pole machine 19
- typhoid 12014
- typical meteorological year (TMY) 9690
- tyrosine 1683
- U**
- ubiquitin 8047
- ubiquitin–proteasome pathway 2700
- ubiquitinylation 3604
- U-gas technology 2238
- Ullmann coupling reaction 6547
- ultimate neutronic investigation code 3819
- ultra battery 5891, 11514
  - design 5883
- ultra high voltage (UHV) transmission 10473
- ultracapacitor 3392, 3427–3428, 3471–3473, 3476–3478, 3480–3482, 3484–3485, 3489, 3495, 3497–3499, 3870, 5107, 5111
  - combination with batteries 3476
  - current–voltage characteristics 3495
  - development 3472, 3498
  - economic considerations 3497
  - energy
    - requirement 3478
    - storage 3472, 3476, 3482
  - hybrid vehicle simulations 3484
  - interface electronics 3480
  - laboratory testing 3481
  - power capability 3473
  - power split strategies 3480
  - powertrain control strategies 3484
  - reductions in battery stress 3489
  - sizing components 3477
  - system control strategy 3480
  - vehicle
    - applications 3499
    - field Experience 3481
    - simulation results 3485
- ultracentrifugal force (UC)
  - nanohybridization method 3434
- ultrafiltration 2904, 2905, 11885
  - pretreatment processes 2905
- ultrafine particle 226, 250, 11302
- ultrahigh-molecular-weight polyethylene (UHMWPE) 8722, 8724
- ultrasound 12278
- ultra-supercritical (USC) steam 2167
- ultraviolet germicidal irradiation (UVGI) 10272, 11132
- ultraviolet radiation (UV) 3596, 9741, 11149–11150, 11152, 11155, 11376–11377, 11412
  - aerosols 11155
  - biological effectiveness 11377
  - clouds 11152
  - distribution 11149
  - geographical distribution 11152
  - instrument measuring 11150
  - molecular scattering 11152
  - ozone 11152
  - screening compounds 11412
  - surface albedo 11155
  - surface reflectivity 11155
  - variability 11149
  - wavelength regions 11150
- ultraviolet (UV) 9740
- ulva 553
- umami 550
- unburned hydrocarbons 5530, 10483
- uncultivated soils 3728
- Undaria 9114
- underfed furnace systems 1379
- underfire air 6461–6463, 6474
- underground
  - cable systems 11158, 11160
    - structure 11160
  - gallery 3235
  - gamma-spectrometry analysis 8676
  - geothermal system 4241
  - landfill fires 11697
  - mine/mining 6634, 6668, 6669, 6675, 7810
    - waste backfill 6675
  - power cables 11177
    - dry aging 11177
    - extra high voltage (EHV) 11177
    - thermoelectric aging 11177
  - testing radionuclide inventories 8493
  - thermal energy storage (UTES) system 4148
- undernourishment 1746
- underwater
  - acoustic 12287
  - excavation 3029
  - forests 6232
- UNEP-SETAC toxicity model 4859
- unified glare rating (UGR) 2828
- unified power flow controller 9351
- uninterruptible power supply (UPS) 674
- universal equine life number (UELN) system 1797
- universal mobile telecommunications system (UMTS) 74
- unmineable coal seams 2155
- unsaturated polyester (UP) resin 6915
- unscented Kalman filter (UKF) 3059, 5461, 11188, 11194, 11199
  - algorithm 3059
- unspoiled landscapes 10379

- unstabilized camera 60
- unsustainable 10301
  - construction 10301
  - design 10301
- upconversion 9424
- updraft
  - combustion 1356–1357
    - with grate 1356
    - without grate 1357
  - gasifiers 11443
- up-flow anaerobic sludge blanket reactor (UASB) 1154
- upgraded metallurgical silicon (UMG-Si) 7957, 9200
  - feedstock 9213
- upgraded solid biofuel 1067
- upper atmosphere research satellite (UARS) 9708
- upwelled water 7239
- uraninite 10411, 11212
- uranium 209, 3583, 3788–3789, 3791, 3819, 4063, 4165, 4180, 4777–4779, 5610, 5634, 5636, 6689–6690, 7052, 7054, 7059–7062, 7067, 7077, 7080, 7143, 7187, 7195, 7209, 8453, 8475, 8480, 8482–8484, 8513, 8565, 8584, 8600, 8610, 8625, 10406, 10410–10411, 11201–11207, 11209–11216, 11218–11224, 11226–11231, 11233–11235, 11237–11242, 11251–11256
  - absorption by fish 11242
  - accumulation 11237
  - algal cells 11252
  - anthropogenic releases 11221
  - aquatic ecosystems 11231
  - aquatic food chain 11234
  - astrophysical origins 11206
  - average vertical distribution 11210
  - background concentrations 11224
  - benthic invertebrates 11254
  - bioavailability 11220, 11224
  - carbide (UC) 7195
  - cellular toxicity 11252
  - chloride 7151
  - concentrations 8476
    - ratios 11229
  - conversion 6690, 7062, 7080, 7187, 11223
    - facilities 7062
  - critical toxicity value 11235
  - decay 8565
  - deposit types 11212
  - dioxide (UO<sub>2</sub>) 7195, 8590
  - dioxide fuel 7187
  - dry deposition 11227
    - effects on offspring 11241
    - elimination
      - through feces 11238
      - through kidney 11238
    - energy content 11205
    - enriching 3789, 6690
    - enrichment 5634, 5636, 11223
    - estimated-no-effect value (ENEV) 11241
    - existing enrichment tails 11213
    - extraction (UREX) 7067, 7147, 11214, 11216, 11219
      - in situ leaching 11214
    - fabrication facilities 11223
    - facilities 7060
      - decommissioning 7060
    - fission products 10425
    - fissioned 3788
    - food chain 11230
    - freshwater 11224
    - from seawater 11214–11215
    - fuel 7058, 7181
      - cycle 7082
      - enrichment 7062
      - fabrication 8584
    - future energy needs 11216
    - geochemical beneficiation processes 11211
    - geoneutrino estimates 11207
    - gold and phosphate tailings 11214
    - hexafluoride 6690, 11233
    - history 6689
    - igneous processes 11210
    - immobilization 4778
    - in floodplain soils 11233
    - in munitions 8513
    - in sediment 11231
    - in situ leaching (ISL) 7060, 8484
    - in the environment 11220
    - inhalation to lungs 11237
    - isotopes 6689
      - isotope separation 5634
    - kidney toxicity 11239
    - lethality 11240
    - light water reactor 11204
    - lowest observed effect concentration (LOEC) 11235
    - lowest-observed-effect level (LOEL) 11241
    - macrophytes 11253
    - measurement 7209
    - mechanisms for the concentration 11209
    - metal mixtures 11256
    - mill/milling 7061, 7064, 7066, 7080, 8483, 11222
      - groundwater restoration 7066
      - tailings 7066
    - mining 3542, 3543, 7054, 7059, 7060, 7066, 7187, 8482–8483, 8584, 10406, 11222
      - decommissioning 3542, 3543
      - remediation 3543
    - mobility 11228
    - mobilization 4778
    - natural organic matter 11255
    - nitrate 8503
    - nitride 7195
    - no-observed-effect level (NOEL) 11241
    - nuclear power plants 11224
    - occurrence 11221
    - oxidation 4778
    - oxide 3962, 6690, 7063, 11212, 11215
    - partitioning 11233
    - phytoplankton 11252
    - prices 11202
    - processing 8483
    - radioactivity 11210
    - reactive transport models 4779
    - recovery 7060
    - reduction 11233
    - refining 11223
    - remediation technologies 7077
    - reserves 7054, 11203, 11216
    - resources 11201, 11206
    - roll-front deposits 11212
    - scarcity 11216
    - seawater 11227
    - sediment ingestion 11235
    - silicate 11215
    - soil
      - ingestion 11230
      - invertebrates 11237
    - speciation 11224
    - stabilization 4778
    - tailings 11222
    - terrestrial environment 11227
      - pathways 11230
    - thermal conductivity 7195
    - toxicity 11255
      - alkalinity 11255
      - hardness 11255
    - toxicity 11220, 11224, 11235, 11239
      - benchmark values 11235
      - in mammals 11237
      - to phytoplankton 11252
      - to terrestrial plants 11235
    - transfer factors 11229
    - trioxide 11223, 11240

- unconventional resources 11213
- uptake 11226
  - through the digestive tract 11238
- uranium–238 3715
- water temperature 11255
- waterfowl 11242
- wet deposition 11228
- zooplankton 11251
- uranyl
  - acetate 11235
  - fluoride metabolism 11240
  - hydrolysis 11228
  - ion 11233, 11239
  - nitrate 11235
  - phosphates 10412
  - sulfate 11235
- urban
  - aerosol 9635
  - agriculture 957, 4732
  - air pollution 213, 239, 245, 955, 11292, 11294–11295, 11314
    - concentrations 11295
    - formation 11294
    - sources 11294
  - air quality 916, 11262, 11273, 11291–11292, 11296, 11307, 11312, 11316
    - concentrations 11291, 11296
    - indices 11296
    - meteorological processes 11262
    - sources 11291
  - airshed 11297, 11314
  - areas 6853, 11263
    - airflow 11263
    - meteorology 11263
    - sustainability 6853
  - atmosphere 11306, 11312–11313
  - atmospheric composition 11311, 11313, 11317, 11322
    - history 11313
  - atmospheric pollutants 11312
  - biodiversity 940, 4738, 5846, 10358, 11333
  - biotope 944
  - boundary layer 11313
  - bus mode 1857
  - canopy 11269
  - canyons 4701, 4732
  - climate 4680, 4692, 4716
  - climatology 918
  - decrement in ozone 11317
  - densification 4683, 4685
  - density 5790, 5795, 5799
  - design 11338
    - model 193
    - projects 11331
  - development 4806, 5806, 5810, 5839, 10371, 11365
    - models 5806
    - open space 11365
    - paradigms 5806
    - programs 6856
    - rezoning 11365
  - drainage
    - modeling 4685
    - systems 4687, 4692
  - driving cycle 8851, 8855
  - drought 8689
  - ecological sustainability 6853
  - ecology 3299, 3363, 6861, 11324–11326, 11328–11329, 11334, 11358
    - history 11326
    - human ecosystems 11329
    - methodological principles 11334
    - urban form 11329
  - ecosystem 3527, 5847, 6856, 10032, 11333, 11336
    - radioactive contamination 3527
  - energy and commodity production 958
  - environmental planning 6856
  - environment 950–951, 5712, 5715, 5717
    - alien populations 950
    - exotic species 950
    - geology 5715
    - homogenization 951
    - land subsidence 5712
    - nutritional “conditions.” 950
    - territorial behavior 950
    - tunneling 5717
  - farming 3207
  - flooding 8689, 11331
  - flow 6862, 11273
  - footprint 11340
  - forest 4751, 11333, 11344, 11346, 11350, 11352, 11353, 11358
    - design 11353
    - information 11358
    - inventory 11358
    - management 11353
    - plans 11350
    - policies 11350
    - policy-making 11352
    - resources 11346
  - forestry 4734, 4748, 10356, 10360
  - form 11329, 11331, 11363
  - fox 950
  - function 11331
  - governance 6854
  - green 953
    - planning 11344
    - space 4693
    - space management 11358
  - greening 4674, 4690, 4705, 4717, 4733–4734, 4737, 4746, 10359, 11344, 11347
    - benefits 11347
  - growth 5788, 5799, 11357
    - undesirable effects 5788
    - boundaries 5806
  - habitat 946, 11326
    - connectivity 946
    - fragmentation 946
  - heat-island effect 943, 4716, 4718, 4732, 4736, 5795–5796, 8692, 11299, 11323, 11337
  - heterogeneity 11335
  - hydrological cycle 8693
  - hydrology 4692
  - infrastructure 3451–3452, 3454, 3469, 5846, 6859, 11355
  - land cover 11330
  - land use 5790, 5795
  - landscape 942, 943, 5796, 5850, 11348
    - design 8859
    - imperviousness 5796
  - mass transportation act 7782
  - matrix 11332, 11341
  - metabolism 6857–6859, 6861, 11326
    - challenges 6861
    - limitations 6861
    - planning 6859
    - studies 6858
  - meteorology 11287
  - mining 6859
  - mobility 1834
  - modeling 3171, 5792
    - Alonso–Muth–Mills model 5792
    - neoclassical monocentric 5792
    - tiebout local public finance model 5792
  - morphology 4681
  - morphometry 11269, 11273
  - nature 952–953
  - night traffic scene 11123
  - particle pollution 11308
  - pathologies 11327
  - perforation 5847
  - planner 952
  - planning 194, 4674, 4677, 5718, 6854, 10360, 11326, 11338
  - pollution 203, 8880
    - change 11346
  - population 11349, 11358, 11363

- public transit 1857
  - public transport 1812
  - rainwater 8695
  - reconstruction 5850
  - redevelopment 11361, 11365, 11372
    - East 11364
  - urban regeneration 5807, 5851
    - temporary use of Brownfields 5851
  - resource flows 6854
  - runoff 5796
  - shrinkage 5837, 5839–5840, 5842, 5846–5849, 5853, 11362
    - carbon storage 5848
    - consequences for urban land use 5839
    - consequences on sustainability 5839
    - demolition 5847
    - effects on ecosystems 5846
    - effects on socio-demographic sustainability 5842
    - modes of collaboration and governance 5849
    - premises 5839
    - response 5849
  - soil 943
  - sprawl 192, 5788, 5796–5797, 5799, 5808–5809, 10362, 11331
    - costs 5797
    - unintended social outcomes 5799
  - stop-and-go driving pattern 8849
  - stormwater 10095, 10105
    - improvement conceptualization 10111
    - management 10098
    - treatment 11897
  - stream syndrome 11337
  - survival strategies 951
  - sustainability 3451, 3454, 5838, 5846, 6855, 8871, 11339
    - challenges 6854
    - planning 6855
  - topology 11576
  - transformation 3554
  - transit modes 1861, 1891
    - bus-based 1891
    - negative trends 1861
    - rail-based 1891
  - transit systems 1886
  - transport systems 807, 6497, 10489
  - transportation 1858, 7781
    - policies 1859
    - system 5950, 5968
  - trees 4689
  - vegetation 11344
  - waste collection 8802
  - water 4734
    - management 4741, 10105
    - management budget 4734
    - metabolism 6859
  - waterways 10095
  - wildlife 949, 953
    - communities 949
    - species 949
  - wind turbine 3398
  - woodlands 11354, 11356–11357
    - areas 11351
    - trees 11345
  - urbanization 90, 2079, 4674, 5787, 5790, 5793, 6853–6854, 9655, 10095, 10358, 10362, 11346
    - land-intensive forms 5793
    - sustainability 6854
    - trends 5790
  - urea 3772, 3776
    - ammonia-based 3776
  - urease 3773
  - urethane 6901
  - uridylpeptide molecule 503
  - urocanic acid (UCA) 9663
  - US Clean Air Act 190
  - US Environmental Protection Agency 219
  - used nuclear fuel 8590–8593
    - dry storage systems 8591
    - geologic repository 8592
    - monitored retrievable storage facility (MRS) 8591
    - PUREX method 8592
    - reprocessing 8592
    - transportation 8591, 8593
  - useful daylight illuminance (UDI) metric 2834
  - useful energy 9938
  - utility theory 2480
  - utility wind farm 12241
  - UV (ultraviolet)
    - effects 11375
    - index 9658
    - light 3611
    - photoreceptors 11413
    - radiation 9651, 9657, 9660, 9662, 9664, 9665, 11384–11385, 11393–11396, 11402, 11411
      - biological damage 9662
      - cataract 9665
      - effects on plants 11393
      - eye damage 9664
      - genetic damage 11394
    - health effects 9651, 9660
    - inhibition of photosynthesis 11395
    - photoconjunctivitis 9665
    - photokeratitis 9665
    - protection 11396
    - skin treatments 9664
    - ultrastructural cell damage 11394
    - vegetation 11384
  - signature mutations 9662
    - oncogenes 9662
    - tumor suppressor genes 9662
- ## V
- vaccination 498, 2970, 5349, 8075, 8146
    - formulation 8146
    - honeymoon period 5349
    - schedules 8146
    - SIR model 5349
  - vaccine 498, 6292–6293, 6296, 6300–6301, 8066, 8074–8075
    - apical membrane antigen 1 6300
    - malaria 6296
    - plant-derived 8066, 8075
  - vacuum
    - circuit breakers 3002
    - insulated panels (VIPs) 7634
    - membrane distillation 2920
    - tower telescope (VTT) 9480
    - tube solar collectors 9524
  - vadose zone 2433, 4777
  - value pricing 5022
  - valued ecosystem component (VEC) analysis 8530
  - valve-regulated lead-acid (VRLA) battery 5886, 8750
  - Van Allen belt 8579
  - Van der Waals
    - bond 752, 755
    - forces 7561
  - Van Krevelen diagram 7476
  - vanadate 2958
  - vanadia-titania catalyst 8366
  - vanadium 4777, 4891, 6087
    - oxides 758
  - vancomycin 500, 504
  - vanillin propylene glycol acetal 4592
  - vanpools 4952
  - Vant Hoff rule 163
  - vapor
    - cloud explosions (VCE) 5256
    - compression 9759
      - chiller 9544, 9546
    - permeation 995
  - vapor-assisted petroleum extraction (VAPEX) 7819

- variable frequency transformer 9348
- variable heavy-chain domain (VHH)
  - antibodies 8074
- variogram 3335
- vascular endothelial growth factor (VEGF) 3160
- veal production 1752
- vector 10918
  - backbone 10675
  - control 35–36, 42
- vector-borne disease 5373
  - climate change 5373
- vedotin 3156
- Vegard's law 7531, 7534, 7536
- vegetable oil 1219, 1221
  - use 1221
- vegetation 3280, 3282, 3285, 11371
  - canopy 3218
  - development 11371
  - diversification 156
  - dynamics 3223, 3290, 3293
    - ecological models 3293
    - individual-based 3290
  - free succession 11371
  - school 3280
  - SIGMATIST school 3280
  - soil conditions 3282
  - working dynamics 3285
  - Zurich-Montpellier 3280
- vegetative growth 1117
  - prolongation 1117
- vegetative insecticidal protein (VIP) 10716
- vegetative phytomer 2541
- vegetative storage protein (VSP) 2664
- vehicle 2465–2466, 2468, 2471–2472, 2477–2479, 3052–3053, 3055, 3065, 3068, 3082, 3124–3125, 3136, 3139, 3177–3178, 3389, 3392, 3472, 3476, 3483–3484, 3495, 3499, 3857, 5029, 5103–5104, 5114, 5024, 5480, 5882, 6257, 8255, 8848, 10491, 10590, 10608, 11188–11191, 11194, 11481–11482, 11487–11492, 11494, 11498, 11503–11504, 11520
  - acceleration 11191, 11490, 11492
  - aerodynamic drag 11488, 11498
  - angular velocity 11190
  - biofuels 11429
  - body frame 3177
  - brake system 8848
  - braking 11191
    - forces 11494, 11498
    - performance 11494
  - communication systems 3082
  - control
    - algorithms 3053
    - signals 11098
    - systems 3052, 11188
  - cooperative collision warning 2465
  - cooperative decision making 2465
  - design considerations 3476
  - detection 10591–10594, 10596–10599, 10601, 10605–10606, 11455, 11460, 11467–11469, 11471–11473, 11476–11478
    - adaboost algorithm 11472
    - baseline distance 10605
    - calibration method 11467
    - clustering 10594, 10596
    - computer vision integrated system 11468
    - correlation-based stereo 10594
    - distance metric 10606
    - downhill simplex algorithm 10597
    - Euclidean distance metric 10596
    - experiment results 11476
    - experimental evaluation 10601
    - feature-based optical flow 10594
    - image training preprocessing 11471
    - interacting multiple model (IMM) 10592
    - iterative closest point (ICP) algorithm 10593, 10596
    - Kalman filter framework 10592
    - Levenberg–Marquardt algorithm 10597
    - LIDAR-based subsystem 11469
    - model-based scene flow 10599
    - monocular images 10591
    - multi-planar LIDAR sensors 11478
    - polar distance metric 10598
    - quaternion-based optimization procedure 10597, 10598
    - sensor fusion 10591, 11460
    - spacetime stereo 10593
    - stereo algorithms 10605
    - stereo camera systems 10591
    - stereo-based 3D pose estimation 10593
    - stereo-based 3D reconstruction 10592
    - system 11468
    - tightly coupled LIDAR 11468
    - vision-based system 11471
  - direct hydrogen-fuel-cell-powered 8255
  - distance measure 2466
  - dynamic(s) 2477–2478, 3053, 11481
    - behavior 3055
    - parameters 3052, 11188
    - states 3053, 11189
  - dynamometer testing 3483, 5480
  - electric load 5103
  - electrification 3857, 5104
  - electromagnets 6257
  - energy consumption 11492
  - energy sources 11503
  - energy storage 3392, 5104, 5105, 5114, 11502
    - batteries 5105, 11502
  - fuels 11430
    - cell-powered 3389, 3472, 3499
    - economy 10494, 11492
  - geometry 2471, 2477
  - gradeability 11491
  - grading resistance 11488
  - hydrogen consumption 3495
  - inertia force 11489
  - instrumented 3086
  - Li-ion battery 11520
  - longitudinal forces 3055
    - evolution 11191
  - magnets 6259
  - maximum braking 2479
  - maximum steering 2479
  - miles traveled (VMT) 1890, 7851, 10928
  - model 2471
  - motion planning 2478
  - motor drive features 11504
  - navigation 3082
  - observability 11194
  - operating fuel economy 10491
  - operation 254
  - oscillations 2468
  - performance 3392, 11482, 11490
    - information 3125
  - pose 10590
    - 3D pose estimation 10590
  - power train structure 11482
  - recognition of dangerous situations 2471
  - reference rectangle 2472
  - resistance 11487
  - robot 3178
  - rolling resistance 11487
  - safely traveling 3136
  - signals 3124
  - speed 11482, 11488
  - stability 3053, 3065, 11188, 11199
    - lateral tire forces 11199
    - sideslip angle 11199
  - starting, lighting and ignition (SLI) 5882
  - state description 2471
  - system-model 3059
    - mismatches 3059



- three-dimensional pose estimation 10608
- time headway (THW) 3139
- track acceleration tests 3484
- tracking system 11473–11475, 11477
  - computer vision sensors 11473
  - LIDAR tracking model 11475
  - particle filter–based tracking algorithm 11477
  - sensor fusion probability model 11475
  - sensor model 11474
- traction motors 11522
  - technology 10542
- tractive effort 11491
- traffic 11298
- trip de-generation 10927
- of travel time (VOT) 5024, 5029
- velocity 3088
- vehicle-assisted data delivery (VADD) protocols 11578
- vehicle-based traffic simulation 108
- vehicle-occupancy requirement 4946
- vehicle–road interaction 3053, 11188
- vehicle-road model 3055
  - estimation process 3055
- vehicle-to-building (V2B) operation 7857, 7859
- vehicle-to-vehicle communication 2464
- vehicular ad hoc networks 11552
- vehicular communication 2484
  - technology 2464
- vehicular network (VANET) 11553
- vehicular transport 11295
- velocity 2050
  - coordination 2478
  - fluctuating component 2050
  - information 3143
- Velodyne 11458
- Venetian blinds 2840
- ventilation 896, 902, 2858–2859, 3684–3685, 6878, 6880, 6890, 10272
  - air 6866
  - chimneys 6890
  - cooling-dominated 2859
  - effectiveness 2858, 3685, 6880, 10272
  - mixed-mode HVAC systems 3684
  - natural 902
  - strategies 6878
- ventilation system 5335, 5337, 5338
  - filter changeouts 5338
  - maintainability 5337
- ventilation-only system 2858
- Venturi
  - reactor 11805
  - washing 1667, 1670
- vernacular architecture 6866
- vernalization 2547, 2549, 2552, 4078
  - genes 4076
  - genetic regulation 2549
- vernonia plant oil 6900
- VERSIT+ model 256
- vertebrate genes 10909
- vertebrate species 10087
- vertical axis wind turbine 3399, 3409
- vertical borehole 4148
  - heat exchanger 4149
  - system 4147
- vertical chimney effect 908
- vertical ground motion 2460
- vertical shear stress 2770
- very low NO<sub>x</sub>-gasification mode 6481
- very-high-temperature nuclear reactors (VHTR) 4066, 9598
- vestibulo-ocular reflex (VOR) 47, 49, 56
- veterinary candidate vaccines 8075
- vibrating grate furnaces 1324
- vibrational spectroscopy 5385, 5394
- Vibrio* 5049, 5051, 5053–5054, 5381, 8759, 9080, 9087
  - *alginolyticus* 5051
  - *cholerae* 5049, 5051, 12014
  - *fluvialis* 5053
  - *mimicus* 5053
  - *parahaemolyticus* 5053
  - *vulnificus* 5054
- vibriosis 5050
- vibrios 5050, 5064
  - sodium motive force 5050
- Viking gasifier 1457
- Vinasse 1006, 1009
- vinylene carbonate (VC) 6144
- vinylethylene carbonate (VEC) 6041
- vinylanthracene 3940
- violaxanthin 7917
- Vip proteins 4021, 4027
- Vip3 toxins 4021
- vir* gene 2588
- viral
  - diseases 10702
  - genes 10703
  - infection 499
  - pseudo-typing 643
  - replication 10703, 10706
  - vectors 8062
- Virginia Fanpetals 1116
- virtual biomass combustion plant 1348
- virus 9088
  - diseases 10705
  - infections 10695
  - seafood-associated 9088
  - transmission 10702
    - vector-mediated 10702
- virus-resistant papaya 4464
- virus-resistant squash 4464
- visbreaking 7831
- visible beam calibration 11459
- visible radiation 9665
  - circadian effects 9665
  - damage of the retina 9665
  - health effects 9665
  - spectrum 11152
- visible-light photoactivity 7894
- vision
  - fusion 81
  - systems 6953
- vision-based driver assistance 11098
- visual
  - acuity 3135
  - adaptation 11098
  - attention 3112
  - comfort 2827
  - field 2840, 3145
    - high dynamic range (HDR) 2840
  - information 56
  - landscape aesthetics 10371
  - motor routine 49
  - odometry 58
  - perception 46
  - processing 3146
    - age-related decrements 3146
    - spatial integration 3146
  - system 3145
    - neuronal activity 3145
    - temporal integration 3145
- vitamin
  - A 1683, 1688, 1697
    - deficiency 1683
    - supplements 1688
  - B complex 1684
    - deficiency 1684
  - C 1685, 1708
    - deficiency 1685
  - D 1685, 11405, 11414
    - deficiency 1685, 11414
    - in pets 11400
    - metabolism 9652
    - receptor (VDR) 9654
  - E 1685, 1705
    - Deficiency 1685
  - K 1685
    - Deficiency 1685

- vitellogenin 11965
  - vitrification 4000, 4904, 6919, 11582, 11584, 11586, 11591, 11733, 11754–11755
    - advantages 11584
    - cost 11755
    - melters 11586
    - of residues 11754
    - plants 11586
    - processes 11586
    - self-sustaining 11591
  - vivax malaria 11076–11077
    - vaccine 6293
  - VLN gas 6482
  - V-notch weir 4218
  - volatile organic compounds (VOCs) 120, 170, 230, 253, 327, 1390, 6875, 8880, 10147, 11293
  - volatilization 9053
  - volcanic
    - activity 2101, 8950
    - aerosols 2516
    - ash 3830
    - eruption 2100, 2116, 2516, 10119–10121, 11614, 11634, 11641, 11643
    - explosivity index (VEI) 11634
    - fields 11627
      - in Mexico 11619
    - gases 11639, 11642
    - plumes 8941
    - systems 4183
    - thermal signatures 8941
    - tremor 11635, 11643, 11646
  - volcanism 1917, 11614, 11618, 11646
  - volcano 3233, 3555, 11613–11615, 11628, 11633–11636, 11641–11644, 11648–11649
    - aircraft 11648
    - deformation 11636
    - disaster assistance program (VDAP) 11635
    - earthquakes 11643
    - eruption forecasting 11642, 11644
    - geodesy 11644
    - geological mapping 11643
    - geophysical observations 11634
    - geothermal energy 11649
    - human population 11648
    - impact 11633
    - lahars 11642
    - landslides 11642
    - lateral blasts 11642
    - lava flows 11641
    - Mexican 11615
    - monitoring 3233, 11633, 11636, 11638–11641, 11649
    - global positioning system (GPS) 11636
    - gravity measurements 11638
    - infrasound observations 11641
    - interferometric synthetic aperture radar (InSAR) 11636
    - monitoring networks 11644
    - satellite monitoring 11639
    - satellite remote sensing 11640
    - strainmeters 11638
    - thermal remote sensing 11639
    - tiltmeters 11638
    - observations 11633
    - of Chiapas 11628
    - of Mexico 11613
    - pyroclastics 11641
    - relationship 3415, 3418
    - seismic monitoring 11635
    - seismic velocity 11636
    - sustainability 11648
    - tephra 11641
    - tsunamis 11642
  - volcano-earthquake interactions 11646
  - volcanology 8941, 11616
    - in Mexico 11616
    - remote sensing 8941
  - Volmer reaction 3414, 3420, 3876
  - Volmer–Heyrovsky mechanism 3415
  - Volmer–Tafel mechanism 3416–3417
  - volt amp reactives (VARs) 2979
  - voltage 3004, 3006, 3489
    - control systems 2989
    - degradation 7765
    - dynamics 3489
    - equation 31, 37
    - instability 10941–10942
    - losses 7765
      - gas-transport induced 7765
    - loss 7759
    - protection 3002
    - rating 2998
    - regulation 2998, 3006, 3016
    - regulators 2988, 3004
    - relaxation 6728
    - rise effect 3016
    - sags 3004
    - source converters (VSC) 11182
    - stability 10949
    - transformers (VTs) 3009
  - voltaiac cell 3852
  - voltaiac pile 740
  - voltammetry 3421
  - voltammogram 6775, 6778, 6787
  - volumetric
    - energy density 6778
    - heat capacity 4136
    - power density 741
  - voluntary building environmental assessment methods 8702, 8710
  - Volvox carteri* 365
  - von Kármán constant 596
  - vorinostat 3164
  - vortex combustors 5280
  - VRLA battery 5890
  - Vuilleumier cycle 9512
- ## W
- Wacker reaction 10173
  - wafer sawing 9205
  - Walker circulation 7254, 8968
  - wall
    - greening 4690
    - insulation 3686
    - jets 10980
  - warm pool 7252–7253, 7260
  - warm roof 4702
  - warm seawater 7314
  - warming effect 139
  - warming hole 8911
  - waste 4764, 4967, 5236, 5241, 5244–5245, 5252, 5284, 5297, 5302, 5721–5722, 5727, 5729, 6453–6454, 6474, 7065, 8790–8791, 8795, 8821, 8832–8833, 8837, 9979, 10000, 10002–10003, 10007, 10010, 10014–10015, 10303, 10577–10578, 10580–10581, 11581, 11592, 11607, 11655, 11661, 11665, 11674–11676, 11682–11683, 11722, 11762, 11765, 11781, 11833, 11839, 11843, 11852, 11856
    - anaerobic digestion 11675
    - analysis software tool for environmental decisions (WASTED) 11671
    - assessing the energy 11765
    - audit process 8783
    - biodegradable 9979
    - biomass 1145
    - boiler 11770, 11774
    - bridge breaking system 6454
    - categories 10002
    - characteristics 5236, 10002
    - chlorinated compounds 5252
    - coal applications 2215
    - co-firing 5241, 5284
    - collection 11655, 11658–11661, 11662–11666, 11759
      - ant colony system (ACS) algorithm 11664
      - constraining routes 11663

- containers 11661
- cost 11664
- door-to-door system 11666
- drop-off centers 11658
- efficiency 11662
- environmental impacts 11665
- hygiene 11759
- jointness of supply 11659
- mobile pneumatic system 11666
- multi-container system 11666
- optimization 11664
- participation 11658
- pay-as-you-throw programs 11660
- programs 11661
- recycling program 11659
- sanitation 11759
- special programs 11666
- systems on recycling 11663
- vehicle loading 11662
- combustion 5265, 5279–5281, 6491, 11788, 11793
  - corrosion problems 5265
  - fluidized bed incinerator 5279
  - mass-burn incineration 11788
  - process 5302
  - slagging incineration 5281
  - vortex incinerators 5280
- commodity exchanges 8790
- composition 4756–4757
- composting 11675
- consumption of natural resources 10015
- crane 4962
- dealing 8795
- definition 10000
- degasification 11856
- disposal 5720, 8796, 10580, 11852
  - sites 11664
- diversion 11673–11674
  - hierarchy 11674
- dumping 8796, 11852
- electrical and electronic equipment (WEEE) 8819
- energy recovery 4764, 11833
- entombment 5721
- environmental impacts 10014
- exchanges 8791, 8792
- extended producer responsibility (EPR) programs 11674
- feed streams characteristics 8832
- feeding system 6453
- flows 10003
- framework directive 11684
- fuel 11860
- gases 5245
  - disposal 4424
- gasification 5314, 11856
- gasifiers 1436
- generation 10011, 10578, 11656
  - forecasting 10578
  - monitoring 10011
  - source activities 11656
- global warming 10015
- glass
  - comminution 8804
  - products 8839
- heat 1439, 6830
  - boiler 5241, 5264, 5270
  - recovery 5264, 5538
- hierarchy 11682
- important properties 5245
- improving energy efficiency 11762
- incineration 4755–4756, 4762, 4769, 4772, 4866, 5235, 5242–5243, 5246, 5266, 5269, 5289, 10582, 11722, 11726, 11768, 11859, 11869
  - ashes 4868, 4873–4874
  - boiler 4977
  - carbon footprint 4756
  - catalytic factors 5269
  - chemical factor 5269
  - directive (WID) 5298, 11696
  - evaluation 5243
  - flue gas cleaning 5269
  - flue gas composition 5266
  - negative public opinion 11869
  - plant 4765, 11770, 11841
  - recycling 5289
  - release of greenhouse gas emissions 4756
  - residues 11721
  - sulfatation 5266
- incinerator 4969, 11760
- index 10007
- landfill 4795
  - leachate 10015
- legal classification 10002
- legislation 11839
- liquids 5245
- loss of habitat 10015
- lower heating value (LHV) 11781
- management 2398, 2405, 2418, 4755, 4757, 4958, 4961, 5242, 5910, 6449, 10023, 10578, 10581, 10582, 11657, 11667, 11669, 11676, 11681, 11684, 11688–11691, 11693, 11697, 11734, 11834–11835
  - application of energy factors 11691
  - complete oxidation 10582
  - disinfection 10582
  - drop-off programs 11667
- economics 11676
- energy 11688
  - for sustainable society 11681
- greenhouse gas effects 11835
- greenhouse gas emissions 11693
- hierarchy 11834
- land management 11697
- landfills 11690
- life-cycle assessment (LCA) methodology 11688
- pozzolanic components 2405
- presentation 11657
- processing 11657
- recycling 11689
- sustainability 2398, 2418
- transfer 11667
- transport 11667
- unification 11734
- materials 1237, 4759, 11699
  - in construction 11699
- minimization 5297, 8773, 8775, 8788
  - economic benefits 8775, 8788
  - workshop 10027
- non-biodegradable 9979
- paper 8798–8800, 11658
  - characteristics 8798
  - collection 8798
  - pulp suspensions 8800
  - recycling technologies 8799
- pay-as-you-throw (PAYT) programs 11676
- pit 4961–4962
- plastics 2411, 4011, 8817, 8819–8820
  - characteristics 8819
  - liquefaction 4005
  - recycling 8820
  - re-utilization 8817
  - sources 8819
- policy 11839
- pre-wetting 5727
- recovery
  - maximization 8833
  - of Usable Energy 11843
- recycling 8834, 11674
  - flow streams 8834
- reduction 2399, 11683, 11831
  - model (WARM) 11688
  - strategies 4619
- re-extrusion 8821
- regulatory framework 11683
- reuse 11683
- rock 6648
- sample set selection 8837
- settlement 5729
- slurry 2206

- solids 5245
- sources 11592
  - reduction 11674
- space availability 10015
- statistics 10010
- streams of interest 5244
- thermal treatment 6474, 10577–10578
- to resources 5722
- transfer 11668
  - optimization 11668
  - transfer stations 11668
- transportation 11665, 11669
- vitrification 11581, 11607
- volatile components 4967
- wood 1538
- waste-charging area 4964
- waste-derived glass 11581, 11598
  - reuse 11581
  - valorization 11598
- waste-derived-products (WDPs)
  - market 8796
- wastelands 11892
- waste-to-energy (WTE) 4958, 5298, 5910, 5911, 5914, 6451, 6487, 10578, 10589, 11690, 11708, 11710, 11715, 11720, 11737, 11738, 11759, 11768, 11787, 11828, 11833, 11837–11838, 11851–11852, 11860, 11867–11868, 11870–11871
  - ash 4871
    - beneficial use 11837
    - management in Europe 11720
    - management in the United States 11737
    - residues 11737
  - basic principle 11852
  - bottom ash 6487
  - combustion 2398, 6451
  - description 11710
  - facility 5915, 5928, 5930, 11758, 11769, 11784
    - air-cooled condensers 11769
    - as power plants 11758
    - CO<sub>2</sub> emissions 5928
    - heat market 11784
    - heat rate 5915
    - NO<sub>x</sub> emissions 5930
    - SO<sub>2</sub> emissions 5930
  - fluidized bed technology 11851, 11871
  - for district heating and power generation 11768, 11870
  - government support 11837
  - incineration 9986
  - installations 4866
  - life cycle inventory 5914
  - plant 1266, 3997, 4899, 6453–6454, 6457, 6460–6461, 6471, 6473–6476, 6479, 6481, 6483, 6485–6486, 6489, 6491, 10588, 11721, 11760–11761–11763, 11765–11767, 11771–11777, 11779, 11781, 11839, 11843, 11846, 11849, 11854, 11863, 11866
    - advanced combustion control (ACC) 6473
    - alternative efficiency evaluations 11766
    - boilers 11763, 11774
    - boiler arrangements 11772
    - boiler dynamic program 6479
    - boiler efficiency 11843
    - bottom ash discharger 6460
    - chemical cleaning 11760
    - classification 11846
    - complete electricity-only energy 11773
    - conventional combustion with air 6461
    - cost benefit analyses (CBA) 11767
    - district cooling 11781
    - district heating networks 11776
    - district heating turbine 11777
    - district heat-producing 11776
    - dust removal 11760
    - efficiency formulae 11765
    - electricity-only concept 11779
    - emissions 11839, 11866
    - energy efficiency 6476
    - energy recovery 6474
    - environmental impact assessment 11866
    - fluidized bed systems 11854, 11863
    - fly ash treatment 6489
    - grate-fired boilers 11771
    - grate technologies 6453
    - heating pumps 11775, 11781
    - horizontal boiler 6475
    - horizontal grate 6457
    - increasing energy recovery 11849
    - internal circulation 11854
    - life cycle assessment (LCA) 11767, 11839
    - MARTIN plants 6471
    - nass streams 11721
    - material flow 11839
    - NO<sub>x</sub> reduction 6481
    - operating mode concept 6471
    - optimizing energy 11781
    - pollutants 11839
    - process simulation 6479
    - rankine cycle 11762
    - reference plants 6491
    - residue qualities 6485
    - reverse-acting grate 6454
    - selective non-catalytic reduction (SNCR) 6483
    - small-to-medium amounts of heat 11774
    - steam turbines 11772
    - superheater 11763
    - sustainability 11761
    - SYNCOM process 6485
    - vertical boiler 6476
- process 8097, 8108, 8110
  - environmental impacts 8110
  - Europlasma gasification process 8108
  - flue gas 8110
  - plasma-assisted 8097
- product 8827
- projects 5722
- statistical entropy analysis (SEA) 11715
- technology 4962, 4963, 4967, 4971, 4973, 4975, 4978–4979, 4982–4989, 4991–4992, 4994, 6449, 11837
  - acid gas removal 4987
  - additive feed system 4991
  - air pollution control system 4973
  - ammonia injection 4986
  - automated rapper system 4979
  - auxiliary control systems (ACS) 4973
  - bottom ash extractor 4971
  - catalyst reactor 4986
  - combustion chamber 4962
  - combustion control system 4963
  - condensate system 4983
  - continuous emission monitoring system (CEMS) 4992
  - demineralized water system 4984
  - emission control loop 4989
  - equipment control systems (ECS) 4973
  - fabric filter 4989
  - feed hopper 4962
  - gas–gas heat exchanger 4986
  - high-pressure steam (HPS) system 4982
  - hydraulic station 4971
  - induced draft fan 4992
  - low-pressure steam (LPS) system 4983
  - nitrogen oxides 4984
  - operator terminal 4973
  - primary air system 4967
  - reagent silo 4991

- retractable sootblower 4978
- secondary air system 4967
- selective catalytic reduction (SCR) 4985
- selective non-catalytic reduction (SNCR) 4984
- stack 4994
- steam boiler 4975
- temperature control loop 4988
- treatment system 1146
- wastewater 1148, 1151, 1169, 1177, 1182, 2084, 2088, 2328, 2333, 2336, 2342, 3454–3455, 3460, 4851, 4866, 6319, 6627, 8760, 8800, 9564, 10190–10191, 10531, 10535, 10579, 11873–11876, 11891, 11912–11913, 11936, 11938, 11940, 11946, 11961, 11965, 11968–11969, 11971
  - biological nutrient removal (BNR) 11936
  - contaminants 2088, 11912–11913
  - control through wetlands 11891
  - discharge 2071, 2092
  - efficient pumping 11938
  - effluent 11874
  - endocrine disrupting compounds 11965
  - energy recovery 11940
  - estrogenic activity 11961
  - fecal waste 6319
  - for irrigation 6627
  - from municipalities 1177
  - from waste paper processing 8800
  - investigated area 11913
  - management 10579
  - mechanical treatment 11936
  - membrane bioreactor treatment 11971
  - nitrification 3455, 11969
  - nonylphenolic compounds 11971
  - operation 11935, 11946
    - energy use 11935
  - organically polluted 1177, 1182
  - outfalls 2088
  - ozonated 2342
  - power consumption 11940
  - quality parameters 11913
  - reclamation 2084, 10190, 10531, 10535, 11873–11875, 11879, 11883–11886, 11963, 11968
    - adsorption 11886
    - chemical oxidation 11885
    - conventional treatment practice 11879
    - distillation 11885
    - electrodialysis 11885
    - energy consumption 11886
    - high-quality reclaimed water 11883
    - ion exchange 11885
    - membrane bioreactor (MBR) 11883
    - nanofiltration 11884
    - reverse osmosis (RO) 11884
    - technologies 11879
  - reuse 2084, 2333, 6626, 6627, 9564, 11876, 11968
    - guidelines 6627
    - in agriculture 6627
  - sample collection 11913
  - sampling sites 11913
  - treatment 2082, 3454–3455, 4851, 4866, 5760, 10191, 11891, 11892, 11898, 11919, 11923, 11937, 11940–11941, 11948–11949, 11951–11958, 11962, 11979
    - advanced control 11948
    - aeration 11937, 11953
    - anti-inflammatories 11923
    - automatic control 11948
    - automatic monitoring 11941
    - basic control actions 11951
    - biological nutrient removal (BNR) 11948
    - biological treatment process 11962
    - cascaded control loop 11955
    - closed loop control 11952, 11957
    - combined sewer overflows (CSOs) 11958
    - constructed wetlands 5760, 11898
    - control 11941
    - control goals 11951
    - control of biological oxidation 11953
    - control of denitrification 11956
    - control of the equipment 11952
    - control problems 11953
    - dissolved oxygen control based on ammonia measurements 11955
    - dissolved oxygen control 11954
    - disturbances 11949
    - electrical energy requirement 11937
    - feedback control 11951
    - incentives for control 11949
    - limit of detection and calibration 11919
    - membrane bioreactor treatment 11979
    - monitoring 11941, 11957
    - natural wetlands 11892
    - open loop control 11952
    - operational costs 11951
    - oxygen uptake rate (OUR) 11954
    - phase length control 11956
    - plant wide control 11958
    - sludge heating 11941
    - sludge thickening 11940
    - technology 1169
  - treatment plant (WWTP) 2328, 11911, 11940, 11947, 11959, 11989
    - anoxic zone 11959
    - automation 11947
    - energy balance 11940
    - enteroviruses 11989
    - primary sedimentation 11940
  - treatment sludges 4874
  - virus concentration 6627
  - water quality analysis 11913
- WATCH-OVER 74
- water 1545–1546, 1552, 1555, 1566, 1580, 2320, 2322, 2324–2325, 2327, 2329, 2343, 2501, 2639, 2643, 2755, 3218–3220, 3414, 3455–3456, 3460–3461, 3553, 5163, 5175, 6606, 6662, 9563–9564, 10189–10190, 10292, 11932, 11934–11936, 11944, 11946, 11979
  - availability 2065, 2071, 2320, 2325, 2322, 9324
    - in the Future 2325
  - balance 2327, 4807, 4808, 5823, 5825
  - boiling test (WBT) 1305
  - canopy-intercepted 3218
  - cascading 10292
  - clouds 9633
  - column 8955
    - optical properties 8955
  - concepts 10189
  - conservation 2082
  - consumption 11939
  - decontamination 9563, 9565, 9582
    - solar hardware 9582
  - density 4910
    - impact of temperature 4910
  - desalination 9759
  - disinfection 9563–9564
  - distribution systems 11941
    - leakage detection 11941
  - electrolysis 1413, 3414, 5163
  - energy
    - interdependencies 11934
    - nexus 11932
    - use 11935
  - erosion 3707
  - evaporation 1545
  - flow 8619
    - Richards' equation 8619
  - footprint 2073
  - for irrigation 2755

- for power generation 3456
- for transportation 3460
- framework directive 6367, 9181, 9187
- funds 3319
- gas shift reaction (WGSR) 1450, 2240, 2245, 3986, 5125, 5128, 5138, 5144, 8330
- habitat 954
- harmony concept 10190, 10191
- hyacinth plant 11893
- industry 2092
- infrastructure 2067, 3455, 8691
- intoxication 10637
- leakage 2324
- management 2075, 2077, 2327, 2643, 4735, 9321, 9323–9324
  - nutrient management 9324
  - remote sensing (RS) data 9324
- molecules 8955
  - inherent optical properties (IOPs) 8955
- mullions 3692
- multielectron splitting 5175
- operation 11946
- overuse 3553
- pathogenic microorganisms 6606
- performance 2073
- photolysis 5175
- planning 5831
  - sustainability criteria 5831
- pollution 2080, 3461, 11710
  - control act 7825
  - control system 11710
- prices 2071
- production 10191
- purification 6662, 9573
  - semiconductor photocatalysis 9573
- quality 1944, 2061, 2065, 2070, 2076, 2078, 2083, 2320, 2322, 2333–2335, 2337, 2339–2340, 2343, 2501, 2504, 3706, 4808, 4813, 5675, 5678, 6611, 6623, 7668, 8923, 9035, 9052, 9058, 10189, 11876, 11879, 11921, 11941
  - bioassays 2337
  - characterization 2340
  - chemical analysis 2337
  - correlation coefficient analysis 11921
  - degradation 3706
  - deterioration 4813
  - evaluation 2340
  - in community-owned water resources 2334
  - information platform 2335
- labeling 2343
- linear regression 11921
- management 9058
- mechanistic studies 5675
- microbial pollution 7668
- mineralization 9052
- models 9052
- monitoring 11941
- ocean color 8923
- parameters 2337, 11879
- pathogen contamination 7668
- precipitation 5678
- scoring 2339
- studies 5675
- testing 6623
- user judgment 2343
- quantity 2061, 10189
- reclamation 2079, 2082, 2090, 11961, 11979
  - micropollutants 11961
- recycling 2324
- resources 1544, 1580, 2065–2066, 2074, 2075, 2319, 2322–2323, 2327, 2334, 2343, 2345, 2801, 11348, 11874, 11876, 11933
  - climate change 2322
  - community-owned 2319, 2327, 2334, 2345
  - management 3451, 11876
  - non-stationarity 2075
  - planning under uncertainty 2066
  - sustainability 2323
- retention pavement 2332
- reuse 2082, 2083, 2329, 6625, 10190, 11979
  - emerging contaminants 2083
  - QMRA 6625
- safety plans 6607
- saving 11944
- scarcity 1546, 1552, 1555, 1566, 1573, 2070–2071, 2080, 2325, 2639, 2898, 5630, 8690, 11934
- scrubbing 1622, 1624
- sensitive urban design (WSUD) 10096, 10098, 10102–10103, 10106, 10113
  - case studies 10103
  - evaluation 10102
  - potential benefits 10102
  - treatment devices 10106
  - water quality 10113
- shortage 8689
- snowmelt 3219
- soluble carbohydrate (WSC) 8017
  - QTL mapping 8017
- splitting 7882, 7885–7886, 7897–7898
  - photocatalysts 7882, 7886
  - photoelectrochemical (PEC) 7882, 7898
- storage 3218, 3220, 10189, 11875
- stress 2325, 2648, 10750
  - indicator 1555
- supply 2061, 2082, 6608, 6612–6613, 6621, 11935
  - risk characterization 6612
  - risk management 6608
- sustainability 2063, 10189–10190
  - solutions 2063
- train 6289
  - energy cost 6289
  - iron lift configuration 6289
- transpiration 1545
- treatment 6609, 6621, 10537
  - biodegradable organic matter control 10537
  - fouling 10537
  - infrastructure 4155
  - technologies 2092
- trees 11175–11177
  - inception time 11177
- tube steam boiler 1344
- use 2326, 2342, 11942
  - efficiency (WUE) 1102, 1482, 1544–1545, 1567, 2639–2640, 2645, 2652, 2755, 9321–9322
  - ranking 2342
  - sustainability 2326
- utility associations 11936
- vapor 317, 7248, 9635, 9697, 9724
- wave propagation 2792
- water–air boundary 11386
- waterborne
  - disease 6612, 6333, 7384, 7385, 7669, 10579, 11985, 12015
  - transmission 6606
- infectious diseases 11997
  - approaches to control 11997
- microorganisms 11390
- parasitic diseases 12018
- pathogens 6320, 6611
- water–energy nexus 11933
- water-filled heating systems 1402
- waterflood 7805
  - mobility ratio 7805
- waterfowl harvest 3346–3347
- WaterGap model 1555, 1566
- water-leaving radiance 8957
- waterlogging 2755
- water-only cyclones (WOCs) 2201
- waterproofing technology 4710
- water-saving activity 2323

- watershed 536, 3319
- water-splitting thermochemical cycles 9597
- watery diarrhea 5052
- Watumaga agar 5054
- wave energy 6347
  - conversion system 6348, 7244
  - generation 11944
- wax hydrocracker 2247
- waxy preprotein 2709
- wayfinding 3136
- weather 623–624, 635, 2101, 2120, 2510, 2523, 2755, 4107, 4678, 5071, 12063, 12075, 12076
  - conditions 2755
  - control 4106
  - forecast(ing) 635, 3212, 5081–5082, 12064
    - boundary layer pressurized balloon (BLPB) 5082
    - driftsonde system 5082
    - weather forecasting models 10257
  - hot spells 4678
  - information 1784
  - models 624
  - prediction model 6598, 12062, 12064, 12070–12071, 12073
    - data assimilation 12071, 12073
    - equitable threat scores 12071
    - geostrophically balanced flow 12071
    - height anomaly correlation 12070
    - initialization 12071
    - skill scores 12070
  - observing strategy 5071
  - research forecast model 6598
  - seamless models 12076
  - vaning 7316
- weathering 1910, 1913–1914, 1916–1918, 1923, 2117
  - chemical 1910
  - crust 1918
  - enhanced 1916
  - of olivine 1913–1914, 1917
  - of silicate minerals 1913
- weed 4739, 10353
  - control 4467, 10724
  - emergence models 9153
  - floras 2750
  - herbicide-resistant 10353
  - infestation 157
  - interbreeding-related 10353
  - production 10043
  - resistance 10349
  - transposon-bearing 10353
  - WeedCast model 9153
- weedy rice 10348
- Weende analysis standard 1105
- Weibull
  - distribution 7398
  - probability function 11162
- weight loss 10648
- welding robot 4979
- well productivity 4228
- wellbore 4383, 4404
  - pressure 9004
  - scaling 4404
  - simulation 9008
- wellhead 4279
  - pressure 4273, 4277
  - separators 4279
- well 5668
- well-to-tank (WTT)
  - efficiencies 5154
  - hydrogen 5142
- well-to-wheel costs (WTW) 1054
- West African Monsoon (WAM) 6751, 6755, 7258
  - greenhouse gas forcing 6755
  - impacts of aerosols 6751
  - model evaluation (WAMME) project 6746
- West Nile fever (WNF) 5360
- Western hemisphere warm pool (WHWP) 7255
- Western wind and solar integration study (WWSIS) 12269
- Westinghouse
  - cycle 5162, 5168
  - corporation (WPC) 8103
- wet biomass 1081, 1086, 1174, 1323, 1619
  - thermochemical use 1086
- wet bottom combustor 5281
- wet combustible 11830
- wet cooling tower 9513
- wet kiln 5286
- wet milling technology 999
- wet powder spraying (WPS) 9960
- wet process method 6146
- wet recooling 9533
- wet scrubber 1395
- wetland 3225, 3315, 3741, 5790, 11892, 11896
  - water column 11896
- wetness index 3214, 3223
- whale 3570
- wheat 1111, 1271, 2704, 4558, 6212–6213, 8017, 8020, 10347, 10352
  - breeding 8016
    - quantitative trait loci (QTL) 8016
  - coleoptile semidwarfs 8020
  - flour 1689
    - iron and folate fortification 1689
  - germplasm 8017, 8020
  - grain 4555
    - quality 4558
  - inflorescence 2704
  - lodging 6212
    - lodging-proof ideotype 6213
  - phytomers 2543
  - selective herbicides 10347
- wheel braking force 11501
- whipworm 12007
- whirling disease 6195
- white spot syndrome virus (WSSV) 1932
- white sweet clover 1116
- whitecap reflectance 8962
- whole bale furnace 1385
- whole effluent toxicity (WET) test 3565
- whole foods market (WFM) 3574
- whole genome selection (WGS) 1739
- whole plant utilization 11452
- whole-crop cereal 1111, 1129, 1139
- whole-organism fingerprinting 5389
  - Raman-based 5389
- whole-parasite vaccine 6302
- wide area
  - measurement system 12083
    - phasor measurement units (PMU) 12083
  - monitoring 12079, 12093
  - network (WAN) 12083
- wild allele 6441
- wild fish stock 3566
- wild poliovirus 8140, 8154
  - genomes 8138
- wild rice 2707
- wilderness in the city 11371
- wildlife 941
  - approaching the city 941
  - conservation 956
    - in sustainable city planning 956
  - disease 5367–5368
    - cause of endangerment 5368
    - effects of climate change 5368
    - source of infections for humans and livestock 5368
  - habitat 941
  - in cities 941
  - in town 950
  - infections 5358
- willingness
  - to accept (WTA) 4788
  - to pay (WTP) 4788, 4802
- willow 6021–6022
- Wilms' tumor 3628, 3646
- wind 7398, 7400–7401
  - atlas method 6594, 6599



- break 899
- climatology 6594, 6600
- conditions 6596, 12214
  - modeling 6596
- development project 12228
- direction 6589
- energy 514, 3398, 4475–4477, 4481–4483, 4485, 6585, 6600, 7850, 12120, 12129, 12146, 12203, 12214, 12222, 12226, 12236, 12255–12256, 12258, 12260, 12262, 12270, 12273
  - Africa 4485
  - applications 12146
  - associations 4476
  - capacity markets 12260
  - conversion systems 4485
  - development 4483, 12222
  - economic development 12270
  - global status 4476
  - green energy sources 4481
  - investments 6586
  - in wholesale markets 12256
  - Latin America 4482
  - location decision making 12236
  - markets in Europe 12258
  - markets in the United States 12256
  - Middle East 4485
  - output 12181
  - penetration 12273
  - planning 9645
  - price 12257
  - public support 12226
  - reanalysis data 6600
  - spatial planning 12236
  - statistics 4476
  - tax credits 12262
  - technology 4475, 12270
  - transmission tariffs 4483
  - utilization 6585
- erosion 3707
- facilities 12257
  - production tax credit (PTC) 12257
- farm 520, 524, 528, 7243, 7394, 7426, 12231
  - sociopolitical acceptance 12231
- generation 8985, 12112, 12127, 12187–12188, 12267
  - effective load-carrying capability (ELCC) 12267
  - renewable portfolio standards 12188
  - reserve requirements 12127
- integration 12131
  - costs 12268
  - studies 12198
- mills 12135
- offshore turbulence 7401
- origin 7398
- profile 6589
- resource 6586–6587, 6589, 6598, 12181, 12199, 12231
  - analysis 6600
  - geographic diversity 12181, 12199
  - geographical distribution 12231
  - mapping 6598
  - model chain 6598
- speed 6589, 6603, 7246, 7398, 7402, 11267, 12149, 12154
  - gust 7402
  - relation 12137
  - Weibull distribution 7398
- towers 6866
- tunnel 916, 11279
  - experiments 11284
  - tests 9790, 11277
- turbulence 12284
- uncertainty costs 8988
- vector 6589
- wind power 4474–4475, 4483–4484, 4489–4490, 6583, 6586, 7400, 7427, 8981, 8984, 8988, 9906, 10516, 12100, 12112–12113, 12117–12122, 12124–12126, 12128–12131, 12134, 12202, 12213, 12215–12218, 12219–12220, 12224, 12233–12235, 12237–12242, 12247, 12272
  - acceptance 12229
    - individual gap 12229
    - of distinguishable aspects 12220
    - social gap 12229
  - aerodynamics 12202, 12215
  - Asia and Pacific 4483
  - balancing 12097, 12215
    - cost 12129
  - cost from electricity markets 12130
  - of systems 12112
  - related results 12131
  - benefits for the community 12240
  - blade technology 12202, 12215
  - capacity 3397, 12115, 12128
  - collaborative decision making 12241
  - community
    - acceptance 12238
    - involvement 12238
  - day-ahead time scale 12117
  - dispatch 12119
  - economic conditions 12235
  - energy potential 7427
  - financial support 12235
  - flexibility 12125
  - forecasts 12117–12118
    - errors 12121, 12128–12129
  - generation 3696
  - generator systems 12134
  - global wind capacity 4490
  - grid integration 12174, 12215
    - transmission planning 12174
  - identity of place 12239
  - impacts of different time scales 12124
  - implementation 12220, 12235, 12237
  - in electricity markets 12126
  - installations 4474, 4483, 12217
  - institutional conditions 12233
  - integration
    - cost 12126
    - studies 12126, 12216
  - intraday market 12130
  - jobs and economic development impacts (JEDI) model 12272
  - load following 8988
  - low load 12117
  - market
    - acceptance 12242
    - forecast 4489
  - meteorology 6585–6586, 12214
  - model chain 6586
  - national planning systems 12237
  - net load
    - forecast errors 12126
    - variations 12122
  - noise
    - annoyance 12247
    - emissions 12217
  - onshore 12113
  - place attachment 12239
  - plants 4477, 4479, 12114, 12116, 12267
    - capacity contribution 12267
    - Europe 4477
    - North America 4479
    - offshore 4479
  - power banking system 4484
  - primary reserves 12125
  - production 4475, 12110, 12113, 12121, 12123
    - exceedence level 12123
    - operating hour 12121
    - operating reserves 12121
    - variability of load 12123
  - project 12230
  - public opinion 12234
  - public support 12234
  - regulation 8988
  - renewable energy feed-in tariff (REFIT) system 12235
  - reserve requirements 12122

- secondary reserves 12125
- simulation 12119
- small scale systems 12216
- social acceptance 12217–12219, 12242
- social actors 12224
- sociopolitical acceptance 12233
- station 12099
- storage 12131
- system balancing 12131
- transmission planning 12216
- wind turbine 515, 526, 3396–3399, 3401–3406, 3410, 4477, 4481, 4483–4488, 6603, 6585–6586, 7394, 7396, 7408, 7410–7413, 7432, 8987, 10378, 10380, 10381, 10618, 12135–12136, 12146, 12154, 12156–12159, 12163, 12164, 12203, 12205, 12207, 12210–12211, 12213, 12215, 12219, 12222, 12228, 12244, 12246, 12247, 12274–12276, 12280–12282, 12289, 12291
  - active power control 12163
  - aerodynamic 7408, 12203
    - efficiency 3401
    - lift 4486
  - aerodynamic noise 12281
  - airborne noise 7432
  - average wind speed 3410
  - behavior during network faults 12164
  - Betz limit 7408
  - birds and bats 7432
  - blade 12205
    - element momentum (BEM) theory 7408, 7410
  - control systems 3402
  - converter-operated 12164
  - costs 3406, 4488
  - deployment 3398
  - developed for operation on buildings 3410
  - doubly-fed induction generator (DFIG) 4487
  - drag-driven 3399
  - ducted 3401
  - dynamics 7411
  - electrical systems 12215
  - environmental conditions 12207
  - environmental impact 12276
  - farms 6810
  - fatigue 7413
  - fault ride through 8987
  - fixed-speed 12136, 12158, 12159, 12163, 12164
  - flicker emission 12157
  - flows over rooftops 3410
  - generator system 7396, 12136, 12149
    - dynamic requirements 12136
    - fixed-speed system 12149
    - operational requirements 12136
    - stationary requirements 12136
  - harmonics 12158
    - current emission 12163
  - horizontal-axis 4486
  - impact on wildlife 12246
  - installation 4484
  - kinetic energy 12203
  - landscape 12244
  - lift-driven 3401, 3405
  - mechanics 7411
  - mechanical noise 12280
  - miner's rule 7413
  - modulation 12282
  - noise 3403, 12247, 12289, 12290, 12291
    - emissions 12274
    - guidelines 12290
    - sources 12280
  - penetration 4488
  - permanent magnet generators 4487
  - power quality aspects 12154
  - quirk cage asynchronous generator (SCIG) 4487
  - reactive power 8987
  - rotor 7408, 7411
    - aerodynamics 12210
    - blades 4486, 12211
    - load 7412
    - motions 7412
  - safety systems 3402
  - seascape 12244
  - social acceptance 12222, 12244
  - sound
    - propagation 12282
    - data 12280
  - source directivity 12282
  - squirrel cage induction generators 4487
  - stall-regulated 12205
  - steady-state influence 12159
  - suitable dimensions 3410
  - system 12138
    - electrical components 12138
    - electrical fundamentals 12138
  - tip speed ratios 7410
  - types 4485, 4487
  - variable-speed 12156
  - vertical-axis 4486
  - vibrations 3404
  - visual impact 12228, 12244
  - voltage
    - fluctuations 12157
    - level influence 12157
  - wound rotors 4487
    - induction generator (WRIG) 4487
- wind-driven ventilation 6870
- wind-energy farm 515
- windmill 517, 519, 12213
- window design 2805
- window to wall ratios 3686
- windscreen projection 11127
- wind-to-hydrogen pathway 10519
- winning genotype 4085
- winter
  - crops 1123
  - depression 9666
  - wheat 1111
- wireless power consortium 704
- wireless vehicular communication 2484
- WISDOM 1310
- Wobbe index 1620
- WOCE project 8664
- Wolff–Chaikoff effect 1686
- wollastonite 1910, 11603
- wood/woody 2283, 2416, 11355
  - as a resource 2283
  - alcohol 5477
  - bioenergy 1554
    - crops 1571
  - biofuels 1553
  - biomass 1202, 1267, 1285, 1288, 1521, 6023
    - crops 1285
    - eucalyptus 1288
  - chip 1026, 1209, 1212, 1373, 1610
    - combustion 1391
    - combustion unit 1212
    - furnaces 1378
  - co-gasification 2416
  - combustion 11298
  - energy 11349
  - fuels 1316, 9830, 9834, 11349
    - calorific value 9834
  - furnaces 1373
  - gasifier 1419
  - harvesting 1309
  - logs 1209
  - moisture 9836
  - pelletizing 1069
  - pellets 1199, 1209, 1211, 1373
    - stove 1211
  - pyrolysis 2416
- wood-burning furnaces 1355
- wooden separators 8748
- wood-firing 1334

woodland 3315, 11355, 11356, 11371  
 – landscape 11357  
 – management 11357  
 – *Rangifer tarandus* 8451

woodstove 1308

workflow transformation 10313

working ion 741, 742

– transfer 742

working waterfront 539

work-plane illuminance 3682

workplane 2829

– illuminance 3682

world

– climate 8920

– coal resources 2182

– energy council (WEC) 2181

– energy outlook (WEO) 1547

– fisheries 7390

– food

– production 2736

– program (WFP) 1688

– ocean atlas (WOA05) 7300

– ocean circulation experiment 5865

– oil production 7447

– population 1742

– radiation reference 9676

– water demand 11942

wound infection 5051, 5054

– *V. alginolyticus* 5051

– *V. vulnificus* 5054

Wright's numerator 439

## X

xanthine oxidase system 3665

xanthophyll 353, 7915, 7917

xanthosine 4036

xenobiotic 822, 825–826, 3258, 3262, 3274, 3586, 3593, 3596, 3613, 6795, 12294, 12296, 12300, 12302–12305, 12309, 12310

– acylation 12304

– biotransformation 12303

– pathway 12300

– carcinogenic 3596

– cellular detoxification 12310

– electrophile 12302

– glucuronidation 12303

– glutathione conjugation 12305

– hydrolysis reactions 12302

– mercapturic acid formation 12305

– metabolism 3256, 12299

– protection 12293

– reduction reactions 12302

– resistance 12295

– solute carrier proteins 12309

– storage 12310

– sulfation 12303

– toxic effects 3593

– uptake 12296

xenon 8484, 8583

– oscillation 3817

xenotime 9948

xenotransplantation 10834, 10866, 10869, 10873

xeric roof gardens 4711

xerography 7558

xerophthalmia 1684

X ray 3026, 5561, 5574, 8537, 8538, 8574–8576, 5860

– absorption near-edge spectroscopy (XANES) 2439, 7743

– analysis 2949

– absorption spectroscopy (XAS) 6075, 7738, 8607

– pre-edge 6075

– rising edge 6075

– diffraction (XRD) 6071, 7569, 8604

– structure factor 6071

– diffractometry 5227

– energies 8575

– fluorescence 8574

– Spectroscopy (XFS) 2439

– irradiation 9101

– seafood 9101

– machines 8576

– photoelectron spectroscopy (XPS) 6074

– ultrahigh vacuum (UHV)

conditions 6074

– powder diffraction

(XRPD) 2439

– shielding 8538

– sources 8574

– yields 8575

xylanase 10845

xylonite 8818

xylose 964, 971, 974, 10754

xylulokinase 974

xylulose 974

## Y

yard waste 11832

yaw rate sensor 77

yeast 993, 1046, 8029

– yeast artificial chromosome (YAC) 2607, 2691, 2698, 2701

yellow cake 7061, 8484, 8584, 11223

*Yersinia* 5056

yield 2721–2723, 2725, 2730, 2734, 2736–2737, 2749, 8017

– conventional breeding efforts 2734

– decline 2734

– field-to-field variability 2730

– fungicide protection 2721

– gap 2722, 2725, 2726, 2728–2730

– closing 2728

– estimates 2726

– farm-level technical constraints 2729

– in the developing world 2730

– gene 10750

– genetic engineering 2736

– genetic variation 2734

– growth 2723, 2737

– increase 2721

– loss 2648

– photon flux (YPF) 7903

– physiological parameters 8017

– potential 2749

– table 3289

yield-enhancing technology 2725

young bull 2785–2786

– genomic evaluation 2786

Young's modulus 2022, 8727

yttria-stabilized zirconia (YSZ) 2936, 3889

– electrolyte film 9854

yttrium 9947

– barium copper oxide (YBCO) 6254

## Z

Zalypsis 3161

Zea mays 2703

zeaxanthin 356, 7917

ZEBRA cell 765

zebrafish 6793–6796, 6798, 6800

– as a green model 6796

– assay 6800

– behavior 6795

– embryos 6795

– functional analysis 6795

– genome 6793

– genome-wide genetic screens 6794

– larvae 6798

– nanomaterial absorption 6798

– nanotoxicity studies 6793

zenith luminance 2818

zeolite 4586, 4588–4590, 4592, 7153, 8606, 8621, 8622

– acidity 4588

– catalysis 4588, 4593

– cracking 4588

– limitations 4593

– catalyst 3988

– drying 7153

- in fine synthesis of speciality chemicals 4592
- isomerization 4589
- preparation 4590
- rearrangement 4590
- zero energy building 7631
- zero valent iron (ZVI) 10443
- zero-carbon city 7792
- zero-emission vehicle (ZEV) 10527
- zero-heating energy buildings 7643
- zidovudine (AZT) 5010
- zinc 794, 1686, 1688–1689, 1691, 1713, 3778
  - deficiency 1686, 3778
  - electrode 6947
  - fertilization 1691
  - fortification 1689
  - ion 6948
  - oxide cycle 5169
  - supplements 1688
  - toxicity 1686
- zinc finger 10919
  - endonucleases 2608, 8061
  - nucleases (ZFN) 2972, 4498, 6794, 7225, 10680, 10831, 10887, 10912
  - technology 4492
- zinc-air cathode 6515
- zinc-air cell 6513, 6516
- zinc-bromine battery 680, 793, 794
- zinc-manganese battery 747
- zinc-mercuric oxide 6506
- zinc-silver oxide 6516
- zircaloy 7195–7196
- zirconium 4602, 9892, 9947, 9955
  - alloy material 7196
  - calcia-stabilized 9892
  - oxynitride 8270
  - phosphate 6561
  - phosphonates 8339
  - yttria-stabilized 9892
- zirconium-based alloy 4065
- zona pellucida (ZP) 6151
- zoo animal 11414
  - UV exposure 11414
- zoobenthos 7025
- zoology of atmospheric motion 12063
- zoomass 1175
- zoonosis 1759, 5049, 5353–5354, 5359, 12029
  - between-host transmission 5354
  - within-host evolution 5354
- zoonotic
  - bacteria 7684
  - diseases 2263, 2972, 5380
  - infections from eating fishes 12024
  - parasites 12055
  - parasitic diseases 12021
  - pathogens 9164
    - indicators 9164
- zooplanktivorous fish 4822
- zooplankton 1963–1964, 4822, 6314, 7273, 8203, 8396, 8402, 11408
  - radionuclide cycling 8402
  - UV sensitivity 11408
- zooxanthellae 2493
- zygote 6151, 6152, 10817

